COUNTWAY LIBRARY
HC 4YRF N

27 A 329

BOSTON MEDICAL LIBRARY.

PURCHASED

BY THE

"Francis Minot" Fund.

NULLA DIES SINE LINEA

PLATE I

Lichen planus.

Page 81

DISEASES OF THE SKIN

THEIR PATHOLOGY AND TREATMENT

BY

MILTON B. HARTZELL, A.M., M.D., LL.D.

PROFESSOR OF DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA

17313

51 COLORED PLATES AND 242 CUTS IN THE TEXT

PHILADELPHIA & LONDON

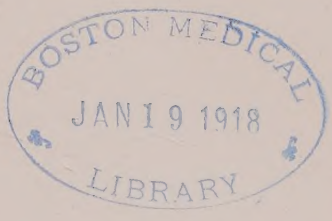
J. B. LIPPINCOTT COMPANY

1917

14973 Mi 700

COPYRIGHT, 1917, BY J. B. LIPPINCOTT COMPANY

27.A.329



Electrotyped and Printed by J. B. Lippincott Company
At the Washington Square Press, Philadelphia, U. S. A.

TO

THE MEMORY OF MY FATHER

EZEKIEL HARTZELL, M. D.

I DEDICATE THIS BOOK

PREFACE

This treatise, which is based very largely upon the author's own experience as a worker and teacher in this special department of Medicine for more than twenty-five years, has been prepared as a text-book for the student of Medicine, as a practical guide for the general practitioner in the recognition and treatment of diseases of the skin and as a work of reference for the dermatologist.

In the preparation of the work the author has not only drawn upon his own experience, but, in order to present the views held by the most eminent authorities, he has made liberal use of the standard treatises of other authors, both American and European, and he desires here especially to acknowledge his indebtedness to those two monuments of industry and learning, La Pratique Dermatologique and Mraček's Handbuch der Hautkrankheiten.

While the author has endeavored to fully present the views held by his co-workers in this very active field of medical research, he has not hesitated to express his own when they differed from those generally accepted; and when he has thus differed it was because he believed his experience justified it.

A not inconsiderable experience in general medicine extending over some years has especially enabled the author, as he believes, to survey the subject from the view-point of the general practitioner as well as from that of the specialist, and, keeping the special needs of the former prominently in mind, he has endeavored to describe the numerous varied and ever-varying symptoms of cutaneous disease lucidly and concisely, avoiding overelaboration and at the same time omitting nothing of real importance.

Considerable space has been given to the subjects of etiology and pathology, since a knowledge of these must lie at the foundation of all rational treatment and prophylaxis; indeed, without such knowledge treatment is a mere blind groping in the dark and prophylaxis a vain delusion.

In the sections devoted to treatment every effort has been made to include all the remedies and methods of treatment of approved value and especially those which the author's own experience has led him to rely upon. The manner of using local remedies has been gone into at considerable length, since success or failure depends quite as much upon the manner of their employment as their selection; indeed, an indifferent remedy used with intelligence is frequently more efficacious than the best used without attention to apparently unimportant details.

Recognizing the great aid to be derived from well-made illustrations, liberal use has been made of the author's own large collection of photographs, a considerable number of them color photographs, which represent

cutaneous eruptions with an accuracy and fidelity to nature quite unattainable in any other form of illustration. A very considerable number of photomicrographs have been introduced which the author hopes will aid materially in the elucidation of the text devoted to pathology.

In conclusion the author desires to express his great appreciation of the liberality and unvarying courtesy of the publishers, the J. B. Lippincott Company.

M. B. H.

Philadelphia, October, 1917.

CONTENTS

Chapter		Page
I.	Anatomy	1
II.	General Symptomatology	17
III.	General Etiology	24
IV.	General Pathology	29
V.	General Diagnosis	35
VI.	General Therapeutics	38
VII.	Congestions—Hyperæmiæ	48
VIII.	Inflammations—Exudationes	51
IX.	Inflammations Due to Vegetable Parasites	398
X.	Inflammations Due to Animal Parasites	437
XI.	Hemorrhages—Hemorrhagiæ	461
XII.	Hypertrophies—Hypertrophiæ	469
XIII.	Atrophies—Atrophiæ	520
XIV.	Anomalies of Pigmentation—Anomaliæ Pigmentationis	530
XV.	New Growths—Neoplasmata	544
XVI.	Neuroses	625
XVII.	Diseases of the Appendages—Morbi Appendicium	634

ILLUSTRATIONS

PLATES

		PAGE
I.	Lichen planus	*Frontispiece*
II.	Psoriasis	97
III.	Erythematous eczema	119
IV.	Erythematous and vesicular eczema	119
V.	Eczema rubrum	121
VI.	Eczema rubrum with crusts	121
VII.	Eczema rubrum with chronic leg ulcer	121
VIII.	Squamous and fissured eczema	121
IX.	Eczema of the beard	146
X.	Seborrhœic dermatitis	149
XI.	Herpes simplex	154
XII.	Chronic pemphigus	180
XIII	Raynaud's disease	204
XIV.	Dermatitis factitia	221
XV.	Lupus vulgaris (elbow)	236
XVI.	Initial lesion of syphilis. Maculopapular syphiloderm	268
XVII.	Late squamous syphiloderm of the palm	270
XVIII.	Ulcerating syphilitic gummata	293
XIX.	Granuloma fungoides	323
XX.	Granuloma fungoides	325
XXI.	Erythematous lupus	325
XXII.	Variola. Varicella	373
XXIII.	Scarlet fever	382
XXIV.	Measles	388
XXV.	Favus of the scalp	398
XXVI.	Ringworm of the scalp	407
XXVII.	Ringworm of the beard	410
XXVIII.	Ringworm of the thighs. Eczemated ringworm of the toes	412
XXIX.	Deep ringworm	415
XXX.	Scabies	444
XXXI.	Scabies	444
XXXII.	Purpura simplex	461
XXXIII.	Circumscribed scleroderma	506
XXXIV.	Xanthoma tuberosum	581
XXXV.	Colloid degeneration of the skin	585
XXXVI.	Epithelioma	598
XXXVII.	Sycosis vulgaris	676
XXXVIII.	Acne vulgaris	693
XXXIX.	Acne vulgaris	693
XL.	Acne rosacea	702

TEXT CUTS

1. Section of the epidermis and upper portion of the corium 2
2. Cells of the rete mucosum, the so-called "prickle cells" 3
3. Tactile corpuscles 6

4. Smooth muscles and hair follicles of scalp ... 11
5. Sweat-gland ... 12
6. Spiral portion of sweat-duct in epidermis ... 13
7. Erythema multiforme, papular variety ... 52
8. Erythema multiforme (erythema iris) ... 53
9. Dermographism ... 59
10. Urticaria pigmentosa ... 62
11. Urticaria pigmentosa ... 64
12. Dermatitis exfoliativa ... 68
13. Desquamation following recurrent scarlatiniform erythema ... 74
14. Prurigo nodularis ... 81
15. Lichen planus. Unusually profuse eruption ... 82
16. Lichen annularis ... 83
17. Lichen planus discoides ... 84
18. Lichen planus. Lines of papules occurring in scratch-marks ... 85
19. Lichen planus. Band-like distribution ... 86
20. Lichen planus ... 88
21. Lichen simplex chronicus (lichenification), thigh, inner surface ... 92
22. Pityriasis rubra pilaris ... 94
23. Pityriasis rubra pilaris ... 96
24. Psoriasis ... 97
24a. Psoriasis ... 100
25. Psoriasis (recent papule) ... 102
26. Pityriasis rosea ... 114
27. Eczema craquile ... 122
28. Eczema rubrum, scrotum ... 126
29. Vesicular eczema ... 130
30. Eczema rubrum, leg ... 131
31. Dermatitis seborrhœica, sternum ... 150
32. Dermatitis seborrhœica, axilla ... 151
33. Dermatitis seborrhœica, lips ... 152
34. Herpes simplex facialis ... 155
35. Herpes zoster. Unusual location ... 160
36. Thoracic herpes zoster (shingles) ... 161
37. Herpes zoster arsenicalis—lichen planus ... 162
38. Herpes zoster. "Ballooned" epithelial cells ... 164
39. Pompholyx ... 168
40. Dermatitis herpetiformis. Erythematous and vesicular type ... 170
41. Dermatitis herpetiformis, annular patches of vesicles ... 172
42. Dermatitis herpetiformis, circinate bullous type (pemphigus circinatus) ... 173
43. Dermatitis herpetiformis (herpes gestationis) ... 174
44. Chronic pemphigus ... 181
45. Pemphigus vulgaris ... 182
46. Pemphigus vegetans, negress ... 184
47. Bleb of pemphigus ... 186
48. Bleb of pemphigus vegetans ... 187
49. Pemphigus vegetans. Section of vegetation from groin ... 188
50. Impetigo contagiosa ... 192
51. Impetigo contagiosa circinata ... 193
52. Bockhardt's impetigo ... 194
53. Dermatitis repens ... 198

54. Dermatitis vegetans 199
55. Infectious multiple gangrene—forearm 202
56. Bacilli in multiple gangrene of skin 203
57. Dermatitis venenata 211
58. Dermatitis venenata 213
59. Arsenical keratosis 215
60. Arsenical pigmentation 216
61. Bromide eruption (bromoderma) leg resembling late pustular syphiloderm 217
62. Bromide eruption (bromoderma) 218
63. Dermatitis factitia 222
64. Granuloma pyogenicum, thumb 235
65. Granuloma pyogenicum 236
66. 67. Lupus vulgaris 237
68. Lupus vulgaris, thigh 238
69. 70. Lupus vulgaris 239
71. Lupus vulgaris, forearm 240
72. Lupus hypertrophicus 240
73. Lupus vulgaris 242
74. Tuberculosis verrucosa cutis, back of hand 249
75. Tuberculosis verrucosa cutis (negro) 250
76. Tuberculosis verrucosa cutis 252
77. Papulo-necrotic tuberculide 254
78. Erythema induratum, with papulo-necrotic tuberculide 258
79. Lichen scrofulosorum 262
80. Multiple benign sarcoid 266
81. 82. Initial lesion of syphilis 268
83. Erythematous syphiloderm 271
84. Papular syphiloderm 272
85. Circinate papular syphiloderm 273
86. Annulo-papular syphiloderm (secondary) 274
87. Sycosiform syphiloderm 275
88. Miliary papular and pustular syphiloderm 276
89. Pustular syphiloderm 279
90. Miliary pustular syphiloderm 280
91. Miliary pustular syphiloderm 281
92. Varioliform syphiloderm 282
93. Pustular syphiloderm 283
94. Large papulo-pustular syphiloderm 284
95. Flat condylomata 287
96. Nodular syphiloderm 288
97. Ulcerating nodular syphiloderm 289
98. Nodular syphiloderm 290
99. Nodular syphiloderm (late) 291
100. Circinate squamous syphiloderm 291
101. Squamous syphiloderm (late) 292
102. Multiple ulcerating syphilitic gummata 294
103. Vegetating syphilitic papule 299
104. Lepra tuberosa 310
105. Lepra, maculo-anæsthetic 313
106. Macular leprosy 314

107. Lepra, maculo-anæsthetic 315
108. Anæsthetic leprosy; contraction of fingers, so-called leper claw 316
109. Lepra anæsthetica 317
110. Bacillus lepræ 319
111. Granuloma fungoides 324
112. Tumor formation with ulceration; total loss of hair of scalp, brows and beard 325
113. Blastomycosis cutis 328
114. Blastomycosis cutis 329
115. Blastomycosis cutis, blastomyces 330
116. Blastomycosis cutis 330
117. Blastomycosis cutis 331
118. Actinomycosis 337
119. Oriental sore 345
120. Rhinoscleroma 356
121. Lupus erythematosus. Mild type 358
122. Lupus erythematosus 359
123. Lupus erythematosus, scalp 360
124. Lupus erythematosus 364
125. Pellagra 367
126. Pellagra 368
127. Pellagrous dermatitis 370
128. From smallpox 374
129. Varicella 395
130. Favus 400
131. Favus. Achorion Schönleinii 402
132. Favus 403
133. Ringworm of the scalp 407
134. Ringworm, scalp. Trichophytosis capitis 408
135. Ringworm of the beard 410
136. Ringworm. Trichophytosis corporis 412
137. Ringworm. Infection from cat 413
138. Ringworm of the body 414
139. Tinea cruris (ringworm of the thigh) 415
140. Ringworm of the axilla 416
141. Deep ringworm 417
142. Ringworm of the scalp 418
143. Ringworm of the scalp 419
144. Epidermophyton inguinale 422
145. Tinea cruris 423
146. Trichophytosis 423
147. Deep trichophytosis 424
148. Trichophytosis profunda 425
149. Tinea imbricata 432
150. Mycelia in tinea imbricata 433
151. Pediculus capitis 437
152. Ovum pediculus capitis 438
153. Pediculus corporis 439
154. Pediculosis corporis 440
155. Pediculus pubis 442
156. Scabies 445
157. Acarus scabiei 446

158. Burrow of scabies 447
159. Larva migrans 459
160. Keratosis senilis—epithelioma 472
161. Keratosis senilis 473
162. Keratosis pilaris 475
163. Keratosis follicularis (Darier's disease) 478
164. Keratosis follicularis (Darier's disease) 479
165. Darier's disease (keratosis follicularis) 480
166. Hereditary keratosis of the palms and soles 483
167. Keratosis of the soles (following eczema) 484
168. Ichthyosis simplex 494
169. Ichthyosis 495
170. Verrucæ digitatæ 499
171. Verrucæ planæ 500
172. Circumscribed scleroderma (morphœa) 507
173. Cutis verticis gyrata 519
174. Dermatitis chronica atrophicans 521
175. Vitiligo 534
176. Vitiligo, following psoriasis 536
177. Tinea versicolor 540
178. Microsporon furfur 542
179. Epithelioma (molluscum) contagiosum 545
180. Epithelioma (molluscum) contagiosum 546
181. Epithelioma (molluscum) contagiosum 547
182. Epithelioma (molluscum) contagiosum. Section of a two-lobed tumor 548
183. Epithelioma (molluscum) contagiosum 549
184. "Molluscum bodies" 550
185. Epithelioma (molluscum) contagiosum 550
186. Trichoepithelioma (benign cystic epithelioma) 552
187. Trichoepithelioma 553
188. Syringocystoma 554
189. So-called syringocystoma 555
190. Adenoma sebaceum 558
191. Lymphangioma 560
192. Lymphangioma circumscriptum 561
193. Fibroma molluscum 563
194. Keloid 566
195. Keloid (negro) 567
196. Hypertrophic scar (scar keloid) following a burn 568
197. Keloid, back (followed burn with a cupping-glass) 569
198. Granuloma annulare 572
199. Granuloma annulare 573
200. Lipoma 576
201. Xanthoma tuberosum 583
202. Colloid degeneration of the skin 585
203. Nævus vascularis occupying the hand, forearm and a part of the upper arm 588
204. Nævus pigmentosus 593
205. Nævus pigmentosus 593
206. Hairy nævus (nævus pilosus) 594
207. Nævus unius lateris 595
208. Flat, smooth pigmented nævus 596

209. Nævus unius lateris 597
210. Epithelioma (rodent ulcer) 599
211. Morphœa-like epithelioma 600
212. Morphœa-like epithelioma 601
213. Epithelioma baso-cellulare 605
214. Paget's disease 608
215. Paget's disease of the buttocks 610
216. Paget's disease of the breast 611
217. Idiopathic multiple hemorrhagic sarcoma 619
218. Multiple pigmented hemorrhagic sarcoma 620
219. Leukæmia cutis 622
220. Leukæmia cutis 623
221. Onychogryphosis 635
222. Syphilis of the nails 638
223. Onychomycosis, ringworm of the nails 640
224. Ringworm of the nail, thumb 640
225. Ringworm of the nails 641
226. Trichorrhexis nodosa 647
227. Monilethrix 649
228. Monilethrix 650
229. Lepothrix, axillary hair 653
230. Lepothrix 654
231. Alopecia areata (in brothers) 663
232. Ringed hair 671
233. Dermatitis papillaris capillitii (acne keloid) 674
234. Dermatitis papillaris capillitii 675
235. Sycosis vulgaris 677
236. Lupoid sycosis 678
237. Comedo 688
238. Acne vulgaris 694
239. Acne vulgaris 697
240. Paraffin acne 706
241. Acne varioliformis 707
242. Hydrocystoma 720

DISEASES OF THE SKIN

ANATOMY AND PHYSIOLOGY OF THE SKIN

CHAPTER I

ANATOMY

The skin is an elastic membrane of variable thickness covering the entire body. It varies in color from the pinkish-white of the European through various shades of brown to the black of the African, the variations in color depending chiefly upon the amount of brown pigment present. Even in the white races there is considerable pigmentation, which is more marked in particular localities, such as the axillæ, the areola of the nipple, the external genitalia, and the eyelids. It is not perfectly smooth, but is marked by numerous furrows and ridges which divide its surface into small lozenge-shaped areas, or, upon the palms and soles, produce peculiar patterns, each individual having his own special pattern. About the joints where the skin is subject to extensive movement these are much more marked than in other situations. It is to be regarded not simply as a protective membrane, but as an organ of great complexity, abundantly provided with blood-vessels, lymphatics, nerves, having certain appendages, such as the sweat- and sebaceous glands, the hair and nails, and having certain functions the proper performance of which is more or less necessary, not only to the maintenance of the health of the skin itself, but to the health of the individual. It is divided into three parts, which are, beginning with the surface, the epidermis, the corium, and the subcutaneous connective-tissue; the two former, while closely united, are yet quite distinct the one from the other in structure and origin, the epidermis being derived from the ectoderm, while the corium is of mesoblastic origin (Fig. 1).

The epidermis is composed of four layers of epithelial cells, more or less distinct, which are, proceeding from without inwards, the corneous layer or stratum corneum, the clear layer or stratum lucidum, the granular layer or stratum granulosum, and the stratum germinativum, also known as the rete mucosum, the rete Malpighii, or the prickle-cell layer. This last layer is the actively growing part of the epidermis and is the most important portion of it.

The stratum corneum or horny layer (see Fig. 1, *s. c.*) is of variable thickness. In certain regions, such as the palms and soles, it is very much thicker than upon the trunk. According to locality, it is composed of a few or many layers of flat, quite elongate, translucent cells, of horny material from which the nuclei have disappeared, although here and

there remains of a nucleus may be perceived in some of the cells of the lowest layer. The cells of this layer are being constantly exfoliated and as constantly renewed from below. Its function is chiefly, if not exclusively, a protective one, protecting the soft mucous layer which lies beneath it.

Immediately beneath the stratum corneum are two or three rows of flat, clear cells—the stratum lucidum—which in sections of the skin appear as a narrow, bright band separating the stratum corneum above from the stratum granulosum below. This layer is practically a part of the corneous layer.

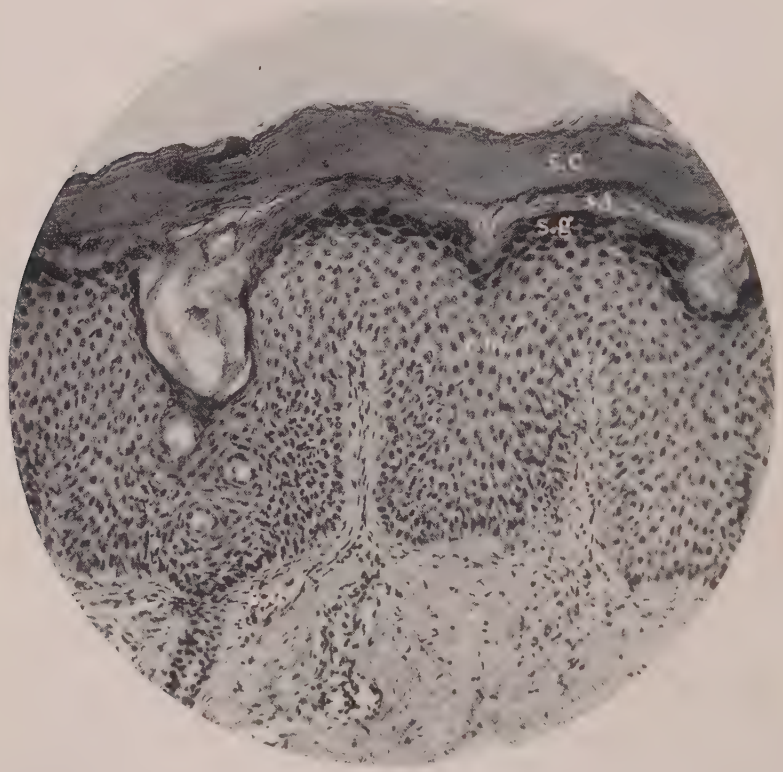


FIG. 1.—Section of the epidermis and upper portion of the corium. *s. c.*, stratum corneum, horny layer; *s. l.*, stratum lucidum, clear layer; *s. g.*, stratum granulosum, granular layer; *r. m.*, rete mucosum; *c.*, corium; *s. d.*, upper portion of sweat-duct.

The granular layer, which in stained sections (see Fig. 1) of the skin is one of the most conspicuous layers of the epidermis, consists of two or three rows of elongated oval cells lying horizontally, containing rather ill-defined, imperfectly staining nuclei, in the protoplasm of which are numerous granules. The nature of these granules is still a matter of some debate. It is supposed by some investigators that there are two substances—eleidin, which exists as droplets of fluid in the cell, and keratohyalin, a solid substance exhibiting the reaction of hyaline material. It seems most likely that there is a

single substance, keratohyalin, which is fluid or solid according to the age of the cell, and that the appearance of this material in the cell is a part of the process of cornification.

The stratum germinativum, or, as it is more commonly called, the rete mucosum (Fig. 1), is the thickest of the layers of the epidermis and is composed of oval, polygonal, and columnar cells with large round nuclei, the oval cells being situated in the upper part, the polygonal in the middle and lower portions, while the columnar cells form a single row, the basal-cell layer, standing more or less at right angles to the undulatory line separating the epidermis from the papillary layer of the corium. The cells of this portion of the epidermis are connected with one another by slender protoplasmic

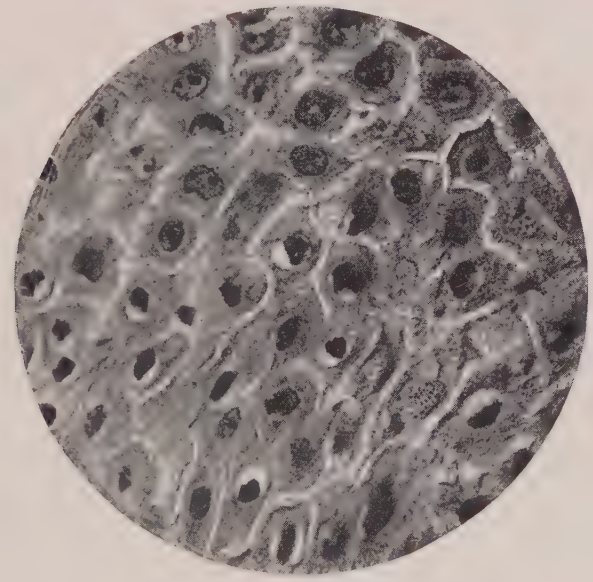


FIG. 2.—Cells of the rete mucosum, the so-called "prickle-cells." Note fine intercellular filaments.

bridges (Fig. 2) which give them, when seen in profile, the appearance of being covered with small spines like a burr, and for this reason they are sometimes spoken of as prickle-cells. The cells of this layer contain numerous fine fibres running in various directions in those centrally situated, but in the columnar cells they pursue a course parallel with the long axis of the cell. These fibres, which were designated protoplasmic fibres by Kromayer, are supposed by Weidenreich to form the intercellular bridges which connect the cells of this layer. Between the cells of the basal layer, starting at the junction of the epidermis with the corium, are numerous fine spiral fibrils. These fibres, which require special methods of staining to demonstrate them, were first described by Herxheimer and are consequently known as Herxheimer's spirals. Although most abundant

in the lowest parts of the epidermis, they may, under certain pathological conditions, extend up to and within the horny layer, according to Eddowes. The nature of these spirals is somewhat uncertain; Herxheimer thought they represented juice channels; Eddowes regards them as fibrin, while Kromayer thinks he has demonstrated their protoplasmic nature.

The **corium** (Fig. 1, *c.*), derma, or true skin, as it is sometimes called, lies immediately below and in contact with the epidermis, sharply separated from it by an undulatory line. It is composed of coarse bundles of interlacing fibrous tissue, collagen, surrounded by finer elastic fibres composed of elastin, and a moderate number of connective-tissue cells, most abundant in the neighborhood of the larger vessels. It contains blood-vessels in abundance, nerves, lymphatics, hair follicles, sebaceous glands, and muscles. It is divided into two parts—the *pars papillaris,* the portion immediately underlying the epidermis, and the *pars reticularis,* the deeper portion—these two not being separated by any sharp line of division, but passing insensibly into each other. The pars papillaris is made up of numerous small nipple-like elevations which fit into corresponding depressions on the under surface of the rete mucosum. Most of these papillæ are provided with blood-vessels running parallel with their long axis and terminating in capillary loops. A lesser number also contain nerve-endings in the shape of tactile corpuscles. The number, size, and arrangement of these papillæ vary greatly according to location. Upon the palms and soles they are arranged in curving lines, while upon the finger-tips they form oval patterns of concentric lines which, owing to the fact that no two individuals have precisely the same pattern, are employed under certain conditions for purposes of identification.

In the pars reticularis the bundles of fibrous tissue are coarser than in the papillary portion and form a looser mesh-work. Immediately beneath the pars reticularis, and practically forming a part of it, is the subcutaneous connective-tissue or stratum subcutaneum. In this portion of the derma the meshes formed by the fibrous tissue are large and usually contain a considerable number of fat-lobules. The sweat- or coil-glands, some of the hair papillæ, and the Pacinian corpuscles are found in this portion of the derma.

In those regions where the fat is abundant it forms the panniculus adiposus.

The skin contains a brown pigment, **melanin,** which in the white races is much more abundant in some regions than in others, such as the genitalia of both sexes and the areola of the nipple in women. It occurs as yellowish or brown granules, which in white-skinned individuals are found almost exclusively in the lowest layer of cells of the rete, but in the negro are present in all parts of the rete up to the stratum corneum. Scattered pigmented cells are also present in the upper portion of the corium.

Blood-vessels.—The skin contains numerous blood-vessels which form

two horizontal plexuses, a superficial and a deep one. The former, lying just beneath the papillary layer of the corium, sends minute capillary loops to the papillæ, while the latter, composed of much larger vessels and lying much deeper in the subcutaneous tissue, supplies the sebaceous and sweat-glands and the hair papillæ. The epidermis is without blood-vessels.

The **lymphatic** circulation of the skin consists of an extensive arrangement of channels without special walls, the so-called juice spaces of Unna, and lymphatic vessels lined with endothelium. The juice spaces are found between the cells of the rete mucosum, in the papillæ, about the excretory ducts of the sweat-glands, the sebaceous glands, hair follicles, about the fibres of the corium, and the muscles. The lymphatic vessels form plexuses corresponding in a general way with the blood-vessel plexuses. The lymph flows from the apices of the papillæ into the epidermis and returns by way of the interpapillary prolongations of the rete.

Nerves.—The skin contains many nerves both of the medullated and non-medullated varieties. The trunks which supply the skin accompany, for the most part, the larger vessels situated in the subcutaneous tissue, and give off branches which ascend through the corium, supplying in their course upwards the various glands, muscles, and hair papillæ found in this structure, and forming a fine network of nerve-fibres immediately beneath the epidermis, from which fine fibrils penetrate the rete. The medullated nerve-fibres end in certain peculiar corpuscles, of which there are three principal varieties—the corpuscles of Krause, the corpuscles of Meissner, and the Pacinian corpuscles or corpuscles of Vater.

The corpuscles of Krause (Kolbenkörperchen) are globular or ovoid bodies surrounded by a connective-tissue capsule having two or three layers composed of flat cells and containing an inner bulb penetrated by a nerve fibril or fibrils which have lost their medulla. These bodies are found on the glans penis, the clitoris, the inner surface of the prepuce, the mucous membrane of the lips, the tongue, and conjunctiva of the lids.

The corpuscles of Meissner and Wagner, tactile corpuscles (Fig. 3) (Tastkörperchen), are oval bodies surrounded by a thin, occasionally laminated capsule, the surface of which is transversely striated. These bodies receive medullated nerves, which on entering the corpuscle lose their medulla and divide up into numerous fine branches which present irregular or spindle-shaped thickenings or swellings, and which form an irregular network within the corpuscle. They are found in the papillæ of the corium, most abundantly on the palms of the hands and soles of the feet, each papilla containing usually one, but sometimes several, corpuscles.

The Pacinian corpuscles, or corpuscles of Vater, are the largest of the corpuscular nerve-endings, being visible to the naked eye They are ovoid or pear-shaped bodies, found most abundantly in the skin

of the finger-tips, but are present also upon the palms and soles, the backs of the hands and feet, upon the upper extremities, the nipples, and the genitalia. They are situated in the deepest part of the reticular portion of the corium and in the subcutaneous connective tissue. Like the other nerve corpuscles, they are surrounded by a laminated capsule composed of many concentric layers of connective tissue, within which is a central core containing the terminal nerve-fibre, which loses its medulla on passing from the capsule into the core. The terminal nerve-fibre passes through the centre of the corpuscle, in the direction of its long axis, terminating at the distal pole in a club-shaped thickening, or, what is less frequent, dividing up into two or three small branches with slightly thickened ends. Each corpuscle is supplied with blood by two or three small vessels which enter it usually at the poles and divide into a fine vascular network under the external layer of the capsule.

Fig. 3.—Tactile corpuscles.

Still another form of nerve end-organ, situated in the lowest portion of the corium and in the subcutaneous tissue, has been recently described by Ruffini. These are spindle-shaped bodies composed of connective tissue and elastic fibres running in the direction of their long axis.

Each of the corpuscles is provided with a single nerve branch which enters at the side, or, less frequently, at the end, and divides up within the connective tissue to form an anastomosing network of fine fibres upon which are numerous swellings (Rabl, Mraček's Handbook). The blood supply is obtained from a rich capillary network which covers the surface but does not penetrate the interior of the organ.

As "touch-cells," Merkel has described certain oval nucleated cells found in small numbers only in the epidermis and upper portion of the corium; these he regards as nerve-cells which are connected with nerve-fibres. Krause, however, does not consider them as in any way connected with the nerves, but as epidermis cells which have undergone mitosis. They are found in those localities where tactile corpuscles are few, as the skin of the abdomen, although Kölliker found them upon the finger-tips and upon the soles. The real nature of these cells is still a subject of debate.

Muscle.—Both striped and unstriped muscles are present in the skin. The former are found chiefly in the face and neck as scanty fibres which, taking their origin from more deeply-seated muscles, are distributed to the lips, nose, eyebrows, and chin. These are analogous to the muscles which exist in certain of the lower animals by which extensive movements of the skin may be produced.

The unstriped or smooth muscles exist as fasciculi associated with the hair and glands or as membranous expansions in the scrotum, forming the *tunica dartos*, in the areola of the breast, and in the nipple, the last arranged as circular bundles. The unstriped muscles connected with the hair follicles, named *arrectores pilorum*, usually arise by several small fasciculi from the papillary layer of the corium, and are inserted in the side of the hair follicles, which they join at an acute angle about the level of the hair papilla, including in the angle thus formed a sebaceous gland. Within and around these muscles are numerous elastic fibres by which they are connected with the fibrous bundles of the corium and subcutaneous connective tissue. Contraction of the arrectores pilorum causes that peculiar condition of the skin known as cutis anserina, or "goose skin," and the erection of the hair such as is seen in some of the lower animals when enraged. Owing to their situation in the angle between the muscle and the hair follicle, the sebaceous glands are compressed by the arrectores, which thus serve as expulsors of the sebum; and they also serve by their contraction and relaxation to regulate the amount of blood in the vessels of the corium.

Pigment.—The color of the skin, while due in some part to other causes, depends chiefly upon the presence of a yellowish-brown granular pigment, melanin, contained in the cells of the epidermis, especially in those of the lowest layers of the rete, although in the dark races and in certain pathological conditions pigment-bearing cells are found in the upper part of the corium as well. In the white races the pigmentation of the skin is not uniform, but varies considerably in different parts of the body, being most marked in the axillæ, in the nipple and its areola, the external genitalia, and about the anus. According to most authors, pigment granules are never present in the cells of the horny layer of the epidermis, even in the dark races, there being only a slight diffuse discoloration of these; but Rabl found them in the corneous cells of the nipple of a nursing woman. In fair skins it is found almost exclusively in the basal cells of the rete mucosum deposited about the nucleus, but in dark skins several rows of cells contain pigment scattered throughout the body of the cell, this pigmentary deposit showing as a dark-brown undulatory line following the contour of the papillary layer of the corium. The origin of melanin is still a matter of debate. Some investigators (Aeby, Riehl, Ehrmann) maintain that it is carried from the corium and subcutaneous tissues to the cells of the epidermis by certain pigment-containing cells, chromatophores, while others (Jarisch, Schwalbe) believe that the pigment is formed in the epidermal cells themselves.

The experiments of Karg, while not conclusive, would seem to favor the former view. This investigator, who transplanted white skin into the skin of the negro, found large branched cells at the boundary line between the corium and the epidermis, which, sending long processes upward into the spaces between the epidermal cells, transferred pigment to them so that at the end of six weeks the transformation of the white into black skin was complete. The function of this pigment is without doubt to protect the skin from the injurious effects of the actinic rays of light, and it is greatly increased in quantity in parts exposed for any length of time to the rays of the sun, of the electric arc light, and to the X-rays.

Hair is present upon all parts of the skin except the palms and soles, the dorsal surface of the terminal phalanges of the fingers and toes, and the penis. There are three quite distinct varieties: long, soft hair, such as is found upon the scalp, in the axilla, and upon the pubes; short, stiff hair found in the eyebrows, eyelashes (cilia), in the nostrils (vibrissæ), and in the external auditory meatus; and soft, fine, for the most part unpigmented, hair or down designated lanugo, present upon the face outside of the bearded region, the trunk, and extremities.

The hair is contained in tube-like depressions extending deeply into the corium and subcutaneous tissues, lined with epithelium, known as hair follicles, each follicle containing, as a rule, one hair, but not infrequently two, three, or more. The portion which projects beyond the mouth of the follicle is known as the shaft, while that within the follicle is called the root, terminating in a swollen extremity, the hair bulb, which surrounds the hair papilla at the bottom of the follicle. It is composed of three parts—the cortex, the cuticle, and the medulla, this last being absent in the lanugo hair and in the free extremity of the long hair. The cortex, which forms the principal part of the hair, is composed of slender bundles of long spindle-shaped horny cells, usually without nuclei, whose long axis corresponds with that of the hair, frequently containing granules of dark pigment.

In the lower portion of the root the cells of the cortex are less elongate, contain nuclei, and are softer, owing to less complete cornification, and, as one approaches the bulb, the cells become oval or polygonal, resembling those of the rete mucosum of the epidermis.

The cuticle of the hair (cuticula pili), which covers it, consists of thin, translucent, irregular quadrilateral cells without nuclei, which overlap one another like tiles on a roof, their free borders projecting at a slight angle and directed toward the end of the hair.

A medulla is present, as a rule, only in the thicker hairs, being absent in the fœtal and lanugo hairs, and it is occasionally absent even in the hair of the scalp. It consists of clear, nucleated cubical cells contained in a central canal, and extends from the bulb to within a short distance of the free end, where it disappears. These cells contain a few granules of keratohyalin and of pigment and numerous air vesicles which give to the marrow, black by transmitted light,

a lustrous white appearance when viewed by reflected light. In the upper portion of the hair the cells of the medulla undergo atrophy, the nuclei disappear, and air vesicles appear between the cells as well as within them.

The **hair follicle**, in which the hair is contained, may be regarded as an invagination of the epidermis into the corium. It is a narrow tube composed of connective tissue lined with epithelium, with a funnel-shaped mouth, slightly constricted some distance below the external opening at the point where the sebaceous-gland duct opens into it, with a bulbous expansion at the bottom into which projects the hair papilla. The connective-tissue portion of the follicle is derived from the corium and consists of two layers—an external layer in which the fibres run parallel with the long axis of the follicle, and an internal one in which the fibres are arranged circularly around it and contain numerous rod-shaped nuclei. In the lower half of the follicle the inner fibrous layer is separated from the epithelial lining by a thin, transparent membrane, the vitreous membrane, which increases in thickness as the bottom of the follicle is approached, then becomes thinner until it disappears completely at the base of the papilla. The internal surface of this membrane, or the one turned toward the epithelial lining of the follicle, presents numerous transverse ridges or furrows which fit into corresponding depressions and elevations in the basal layer of the epithelial cells.

The epithelial lining of the follicle is continuous with the epidermis, and down to the neck of the follicle, the point where the sebaceous glands open into it, is identical in structure with it, but at this point the stratum corneum and the stratum granulosum disappear. It is divided into two layers or sheaths, the external root-sheath and the internal root-sheath. The external root-sheath is a continuation of the rete Malpighii of the epidermis and is composed of nucleated polygonal cells resembling the cells of that portion of the epidermis. Its thickness diminishes as the bottom of the follicle is approached until, at the base of the papilla, it may contain but a single row of cells. Unna has proposed to call this the "prickle-cell layer of the hair follicle" instead of external root-sheath.

The inner root-sheath, closely connected with the external sheath, extends from the neck of the follicle to the neck of the hair papilla, and is composed of three layers of cells more or less distinct—an outside layer, the layer of Henle, consisting of a single row of polygonal nucleated cells; a middle layer, the layer of Huxley, in which the cells are also polygonal and contain granules of keratohyalin; and an inner layer, the cuticle of the follicle, consisting of elongate cells which have their long axes transverse to the axis of the follicle, and which, as they approach the follicular neck, become more or less oblique and interlock with the cells of the cuticle of the hair shaft. The cells which compose the several layers of the inner root-sheath undergo cornification as they near the mouth of the follicle, become more elongate, and lose their nuclei.

The papilla which occupies the bottom of the follicle is a pear-shaped projection composed of connective-tissue fibres from which the hair is produced, the medulla growing from the top, while the cortex of the shaft is produced by the sides. According to Rabl, hairs which show a strongly growing medulla are seated upon papillæ which have pointed tops, while the lanugo and hair in which the growth of the medulla has come to a standstill are found on papillæ with rounded tops.

The follicles may occur singly or in small groups, the latter being the usual arrangement upon the scalp. They are never placed at right angles to the skin, but more or less obliquely, extending to a depth varying from 2 to 7 mm., in the case of the strong hairs, down into the subcutaneous tissue, while the lanugo hair does not reach below the corium.

Sebaceous Glands.—All hair follicles, practically without exception, are provided with glands, known as sebaceous glands, which secrete a fatty substance, the sebum, which is discharged into the follicle, or, in some instances, directly upon the skin, and serves to lubricate the hair and the skin. The number occurring within each follicle varies from two to six or eight.

They occur in several forms, the simplest being a rather short pyriform tube lined with epithelium, while those connected with the follicles of well-developed hairs, such as the hairs of the scalp, are racemose glands with a variable number of lobules, and a duct through which the sebum is discharged into the follicle some distance below its mouth. In the case of the lanugo hairs, the gland is often quite as large and well developed as the follicle, the hair occupying the excretory duct of the gland which opens directly upon the surface. They are provided with a connective-tissue covering derived from the corium, which is lined with a thin membrane, the membrana propria. The lobules have no lumen, but are filled with epithelial cells, the most external layer of which, cubical in shape, with a round or oval nucleus and granular contents, are seated upon the membrana propria. Those occupying the more central part of the lobule are polygonal in shape and contain a clear protoplasm in which are minute drops of fat, the amount of fat increasing as the centre of the lobules is approached. Among the largest and most complex of these glands are those found upon the nose; they are frequently quite large and contain many lobules. The ducts are lined with several layers of epithelium which are continuous with the rete mucosum lining the mouth of the follicle (Fig. 4).

While occurring for the most part as appendages to the follicles, they are also found in regions where hairs do not exist, such as the border of the lips, the inner surface of the prepuce, the glans penis, and the nipple and its areola; these discharge their secretion directly upon the cutaneous surface.

The largest glands are found in the free borders of the eyelids

and are designated by a special name, the Meibomian glands. The sebaceous glands found on the glans penis and on the inner surface of the prepuce are known as Tysonian glands.

Sweat-glands.—In addition to the sebaceous glands the skin contains another form of gland, known variously as coil-glands, sweat-glands, or sudoriparous glands (glandulæ sudoriparæ). These are found in great

Fig. 4.—Smooth muscles and hair follicles of scalp.

numbers in the meshes of the reticular portion of the corium and in the subcutaneous connective tissue.

The glands, which are globular in shape, are made up of coiled tubules surrounded by an external layer of connective tissue and elastic fibres the inner surface of which forms the membrana propria, and an inner layer of smooth muscle fibres upon which is seated a single layer of cylindrical epithelial cells. There are two kinds of coil-

glands, distinguished from one another chiefly by their size, but also by slight differences in structure. The large glands are found in the axilla, the areola of the nipple, around the anus, and in the external auditory meatus, the largest in the first-named situation, where they form an almost continuous mass.

Unlike the small glands in which the lumen of the tubules is of fairly uniform size, the large glands show constrictions and dilatations and those of the axillæ short tubular branches with blind ends.

The glands which occur in the lids, which are also known as the glands of Moll, are so modified in shape that they present a spiral

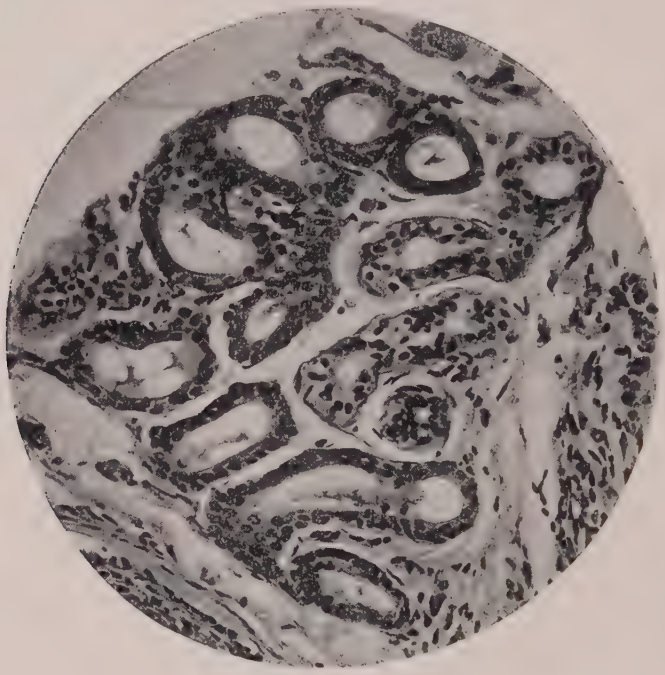


FIG. 5.—Sweat-gland.

arrangement instead of a coil, and they empty into the hair follicles instead of upon the surface, unlike the other coil-glands (Figs. 5 and 6).

The excretory duct is smaller in diameter than the secreting tubules of the gland. It is lined by two rows of cubical or cylindrical epithelial cells, the inner row of which is covered by a delicate membrane, the cuticula, and in the corium is surrounded by a continuation of the membrana propria of the gland and a thin layer of connective tissue. Upon entering the epidermis, which it always does at an interpapillary depression, it loses its membrana propria and connective-tissue covering, retaining only the epithelial lining in which the cells become flatter as the surface of the epidermis is approached. In the corium the duct is straight, or sometimes slightly undulatory, but upon enter-

ing the epidermis it assumes a markedly spiral course, terminating in a funnel-shaped opening, the sweat-pore, around which the cells are arranged concentrically. The secretion of the coil-glands is in most instances a watery fluid, the sweat or perspiration; but those found in the external auditory meatus, the glandulæ ceruminosæ, secrete a fatty material, the cerumen.

The **nails** are horny, translucent plates covering the dorsal surface of the distal ends of the terminal phalanges of the fingers and toes. They are approximately quadrilateral in shape, convex from side to side, the free distal end projecting slightly beyond the finger-pulp, while the lateral and proximal borders are contained in a groove, the nail groove, the fold of skin forming this groove being designated the nail fold.

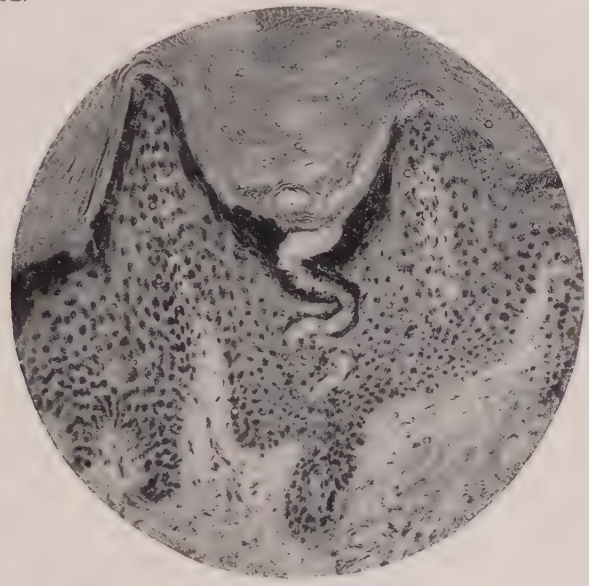


FIG. 6.—Spiral portion of sweat-duct in epidermis.

They present three quite distinct divisions: A convex free margin, which projects beyond the finger-tips and is an opaque white; the body, which is translucent, pink in color, and covered with fine longitudinal striæ; and a small semilunar area at the posterior border, the lunula. The posterior border or root of the nail is covered over by a narrow fold of the epidermis, the eponychium.

The nail bed, upon which the body of the nail rests, is divided into two portions, a posterior portion, the matrix, from which the growth of the nail takes place, and a larger anterior portion, the nail bed proper; it is composed of epidermis, corium, and subcutaneous connective tissue. The epidermis has neither a corneous nor granular layer, and corresponds to the mucous layer of the skin. The corium beneath the matrix presents numerous small papillæ without

any definite arrangement; anterior to the lunula there are no papillæ, but these are replaced by numerous fine longitudinal ridges running parallel with the long axis of the phalanges. The connective tissue of the nail bed is usually free from fat and consists of fasciculi, which, starting from the periosteum of the phalanges, diverge in a fan-like arrangement to all parts of the nail bed. The nail bed is liberally supplied with blood through numerous capillary loops.

The nail substance is composed of nucleated polygonal cells resembling the cells of the corneous layer of the epidermis. Quite frequently they contain minute air vesicles, and when a considerable number of cells adjoining contain such air vesicles they give rise to the opaque white spots which are often seen in the nails.

PHYSIOLOGY

The skin performs a variety of functions more or less important to the general economy. First, it serves in a purely mechanical way as a protective covering. The firm and elastic corium and the subcutaneous connective tissue with its cushion of fat serve admirably to protect the underlying organs and tissues from external violence. The impervious and insensitive horny layer of the epidermis serves to protect the skin itself from injury by the innumerable chemical and physical irritants with which it daily and hourly comes in contact, acts as a barrier to bacterial invasion, and, aided by the fat which it contains, derived from the glands of the skin, it prevents undue loss of the fluids of the body by evaporation and the excessive loss of heat which such evaporation would bring about. The pigment contained in the upper portion of the corium, and more particularly in the epidermis, serves to protect it from the frequently injurious effects of the actinic rays of light.

The skin, through the sebaceous and coil-glands, performs important secretory functions.

The sebaceous glands secrete a fatty substance, the sebum, which constantly anoints the hair and skin, and serves, together with the secretion from the coil-glands, to keep the latter soft and pliable. In the glands it exists as a thick, oil-like fluid, but in the excretory ducts it is of much firmer consistence and may be readily expressed from them as a butter-like mass. It is of somewhat uncertain composition, containing glycerin fats, fatty acids, cholesterin, soaps, and drops of fat mixed with epithelial débris. The secretion of sebum is a continuous one.

The coil-glands are usually spoken of as sweat-glands or sudoriparous glands, since they are for the most part concerned in the production of the sweat; but certain of these, as has already been pointed out, such as those in the external auditory meatus, produce a fatty secretion. The sweat is a watery fluid composed of a little more than 99 per cent. water and about 0.9 per cent. solids, and usually acid in

reaction, although not infrequently alkaline, the reaction changing from acid to neutral or alkaline in the excessive secretion induced artificially and under a variety of other circumstances. The solids of the perspiration consist of inorganic alkaline salts, chiefly sodium chloride, small quantities of earthy phosphates and iron oxide, and organic substances, the chief of which is urea, and volatile fatty acids, such as formic acid, acetic acid, butyric and propionic acids. In pathologic conditions in which the secretory function of the kidneys is much impaired, leading to suppression of urinary excretion, the coil-glands may vicariously assume the function of the kidneys, when the amount of urea in the sweat is considerably increased. The secretion of the sweat is not a continuous one, but varies greatly according to a number of circumstances. It is chiefly dependent upon nervous influences transmitted through nerve-fibres which are abundantly distributed to the glands, the centres for which are situated in the anterior horns of the spinal cord. It is likewise influenced by muscular activity, temperature, and a few drugs, the chief of which is pilocarpine.

As the result of the early investigations of Simon, Kölliker, and Meissner and the later studies of Unna, it seems to be pretty certain that the sweat-glands also secrete fat at times, if not continuously.

The skin possesses the power to absorb various substances when brought into contact with them. The horny layer of the epidermis, anointed as it is by the fatty secretion of the glands of the skin, presents an effective barrier under normal conditions to the absorption of watery fluids, but when this is removed, and the rete mucosum is laid bare, absorption takes place quite readily, so that various chemical substances in watery solution may thus be introduced into the system. Fats, solid or fluid, are taken up by the skin, especially when pressure is employed, and various substances, when mixed with these, may be made to enter the system. These probably pass through the skin chiefly by way of the excretory ducts of the glands.

Various gases and volatile substances are absorbed by the skin with more or less readiness.

Through its permeability by gases and vapors, the skin also performs a respiratory function, oxygen being taken up, and CO_2 and water being given off. As compared with the lungs, however, the interchange of gases is very slight, only about one one-hundred-and-twenty-seventh (1/127) as much oxygen being taken up by the skin as by the lungs, while the CO_2 varies from 1/25 to 1/92 of that excreted by the pulmonary surface. The amount of water given off by the skin is greatly in excess of that given off by the lungs, being about twice as much (Kreidl, Mracek).

One of the most important functions performed by the skin is that of the regulation of the temperature of the body. Through it the animal heat is maintained at a constant figure. When the external temperature rises, the blood-vessels of the skin dilate through

the vasomotor centres, and the quantity of blood thus brought to the surface is greatly increased, and heat is lost by radiation. The activity of the coil-glands is greatly increased at the same time and the evaporation of the perspiration very materially helps in the dissipation of bodily heat. When the external temperature is lowered, the blood recedes from the skin, and radiation from it is greatly lessened, thus conserving the animal heat, since the skin itself is a poor conductor of heat. The contraction and relaxation of the smooth muscles of the skin likewise influence the amount of blood in it, and consequently the dissipation of heat.

No less important than the regulation of bodily temperature are the functions which the skin performs as an organ of sensation. It was formerly supposed that the various sensations experienced through the skin were simply qualitative variations of a single sense—that of touch; but the studies of Blix (1883) and Goldscheider (1885) have shown conclusively that the nerve end-organs contained in the skin vary much in the manner of their response to stimulation, some responding only to touch, others to heat and cold, and still others to pain, each requiring its own special stimulus, responding to no other. Thus we have in the skin tactile sensibility, temperature sensibility, pain sensibility, each of these having its own special nerve end-organs, through which these various sensations are produced.

CHAPTER II

GENERAL SYMPTOMATOLOGY

Diseases of the skin may be accompanied by both constitutional and local symptoms. The former are frequently absent, but when present differ in no respect from the constitutional symptoms which accompany general and visceral diseases and, therefore, need no special description; but the local symptoms present a special group of morbid phenomena peculiar to the skin and must, on that account, be specially considered.

The symptoms of disease of the skin are of two kinds, viz., objective symptoms, those which are perceived by the sight and touch of the patient or other observer, and subjective symptoms, or those which are perceived by the patient alone, upon whom we must depend for a knowledge of their existence and character.

The objective alterations, which occur upon the skin as the result of pathological processes and commonly called eruptions or efflorescences, are made up of various lesions which are divided into two classes—primary and secondary lesions. The former are among the early symptoms and are those which give to each disease its special characters, without which it cannot exist, while the latter, usually, but not always, the result of the former, may or may not be present in any given case. A thorough acquaintance with the primary lesions is of the utmost importance, indeed it is necessary for any intelligent comprehension of cutaneous diseases—it is the very A B C of the subject.

The primary lesions of disease of the skin are: Maculæ (spots, stains; Fr., Taches; Ger., Flecken); Papulæ (papules; Ger., Knötchen); Pomphi (wheals, urticæ; Fr., Plaques ortiée; Ger., Quaddeln); Vesiculæ (vesicles; Fr., Vesicules; Ger., Bläschen); Bullæ (blebs, blisters; Fr., Bulles; Ger., Blasen); Pustulæ (pustules; Ger., Pusteln); Nodulæ (nodules, tubercles; Fr., Tubercules; Ger., Knöten); Tumors (phymata; Fr., Tumeurs; Ger., Geschwülste).

Macules are variously sized and shaped, more or less definitely circumscribed changes in the color of the skin, which are neither elevated above nor depressed below the surrounding healthy skin; they are visible, but not palpable lesions. They are of various colors, presenting various shades of red and brown and combinations of these, yellow, black, and white. They vary in size from a mere dot up to the size of the hand and even larger. They are produced by a great variety of causes. A large number are the result of hyperæmia, active or passive; these are bright red or violaceous, and disappear temporarily under pressure; they may be caused by permanent dilatation of the capillaries of the skin, as in the so-called port-wine stain; they may be the result of hemorrhage into the skin, as in purpura, when

they undergo the changes in color peculiar to extravasated blood and cannot be made to disappear by pressure. Yellowish, brown, and even black, macules occur as the result of abnormal deposit of pigment in the skin, a familiar example of this lesion being the ordinary freckle; pigmentary macules also frequently follow the eruptions of syphilis, lichen, or long-continued inflammation, especially upon the lower extremities, or prolonged venous stasis. White macules result from pigment atrophy, such as occurs in vitiligo.

Papules are small, circumscribed, solid elevations of the skin, usually more or less firm to the touch, with flat, rounded, or acuminate summits and round or angular bases. They are red, yellow, or brown in color, or may be the color of the normal skin. They vary in size from a pin-point to a split pea and may be due to morbid changes in the epidermis, in the corium, in the hair follicles, and in the sebaceous and sweat-glands. They may be the result of inflammation, as in eczema, and may undergo further transformation into vesicles or pustules; they may result from the retention of secretion (sebum), as in milium and comedo; from abnormal production and accumulation of cornified epithelium, as in keratosis follicularis; from hemorrhage. Exceptionally the summit may show a central depression, as in the papule of lichen planus. The duration of these lesions varies greatly—they may run an acute or chronic course, or they may be permanent. Not infrequently they are accompanied by subjective symptoms, the most frequent being itching of varying degrees of severity.

Wheals are circumscribed, flat elevations of the skin, varying in size from a small pea to the palm of the hand, and even larger, the larger wheals being formed, usually, by the coalescence of a number of smaller lesions. They vary in color from a whitish pink to crimson and, under moderate pressure, show quite white against the pink of the normal skin. They present a great variety of shapes—round, oval, gyrate, and not infrequently linear, these last resembling a stroke with a whip-lash. They are accompanied by burning and itching, frequently extreme. One of the most striking features is the extreme suddenness with which they frequently appear and disappear, individual lesions lasting but an hour or two, and sometimes but a few minutes; exceptionally they are more permanent, lasting some days. Occasionally they are of unusual size, as large as a small egg; these so-called "giant" wheals are usually hemispherical in shape and not infrequently are the color of the normal skin. The wheal is an angioneurotic phenomenon, the result of a sudden circumscribed œdema taking place in the upper portion of the corium. It usually disappears without leaving any trace, but may be followed by slight transient pigmentation, or, as in urticaria pigmentosa, considerable pigment may be left, which disappears only after the lapse of a considerable time. These lesions are seen in urticaria, in the sting of the nettle, and after the stings and bites of insects.

Vesicles are rounded or acuminate, occasionally umbilicated, elevations of the epidermis, varying in size from a pin-point to a small pea, filled with transparent or turbid fluid, usually, but not always, serum. They may contain fluid from the beginning or they may begin as papules, fluid appearing only after some hours; they may contain but a single cavity or they may be multilocular. They may be discrete or they may occur in small groups or variously-sized patches in which the lesions tend to become confluent. When very numerous and closely aggregated they may coalesce, so that the epidermis is elevated over considerable areas, and bullæ, or blebs, are formed. Spontaneous rupture of their walls frequently occurs, and the escaped serum dries into yellowish crusts; or the fluid in them may be absorbed without rupture and the epidermic covering desquamate. Through secondary infection of their contents they are often transformed into pustules. They may be seated in any portion of the epidermis, immediately beneath the horny layer or deeper in the rete mucosum. They occur in many inflammatory diseases of the skin, such as eczema, when they are seated upon an inflammatory base, or they may result from the retention of sweat, as in sudamen, or from dilatation of lymph-spaces, as in lymphangioma circumscriptum. Their course is, with but few exceptions, acute, and when a symptom of inflammation they are usually accompanied by more or less severe itching and burning.

Blebs, or bullæ, are elevations of the epidermis varying in size from a pea to an egg, filled with fluid which is usually transparent, straw-colored serum. They may contain turbid sero-pus, pus, or blood mixed with serum or pus. They are usually hemispherical in shape, with tensely distended walls, which do not, as a rule, tend to spontaneous rupture, but they may be irregular in shape and may be only partly filled, with flaccid walls which easily break. They usually rise abruptly from apparently normal skin, but may be surrounded by a slight areola, especially when their contents are purulent. As a rule they are not accompanied by any decided subjective symptoms, but exceptionally itching and burning are present. The anatomical seat of the bleb varies somewhat.

The effusion of fluid may take place immediately beneath the horny layer of the epidermis, which then forms the roof of the bleb, in the deeper portions of the rete mucosum, or between the epidermis and the papillary layer of the corium; in the last-named case the entire epidermis, which is stripped off bodily from the underlying papillæ, forms the roof of the bleb.

Blebs occur in pemphigus, of which they are a characteristic feature, in dermatitis venenata, in dermatitis herpetiformis, and in other inflammations of the skin.

Pustules are elevations of the epidermis containing pus. They vary in size from that of a small pea to a thumb-nail, are usually rounded, but may be flat, acuminate, or umbilicated. They are usually

surrounded by an inflammatory halo and are often accompanied by more or less induration of their bases. They may begin as pustules, but are frequently preceded by papules or vesicles, from which they develop. They are accompanied by tenderness and pain, but itching is an infrequent symptom. They pursue an acute course and may terminate in discharge of their contents with the formation of thick yellow, greenish, or blackish crusts, or they may dry up with moderate crusting. Occasionally ulceration takes place beneath the crusts. When the inflammation is severe, and the corium is involved to any depth, scarring follows. Pustules may be seated in the epidermis, in the sebaceous glands, as in acne, or in the hair follicles, as in sycosis. They occur in acne, in syphilis, in variola, in ecthyma, in which disease they are frequently followed by permanent scarring. They are also seen in eczema, scabies, and other inflammations of the skin, in which they usually disappear without leaving any trace.

Nodules, or **tubercles,** are circumscribed, usually firm, elevations of the skin, varying in size from a split pea to a hazelnut. They may be the color of the normal skin or various shades of red, and are usually rounded in shape. They differ from papules not only in being larger as a rule, but by being more deeply seated, and are much less frequently caused by inflammation. They are seen most commonly in the infectious granulomata, such as syphilis and tuberculosis, when they are usually a brownish or yellowish red, and in the new growths, both benign and malignant, such as fibroma, carcinoma, sarcoma. They pursue a varied course. They may be absorbed, they may undergo ulceration, or they may remain unchanged for months or years.

Tumors are more or less definitely circumscribed swellings, varying in size from a pea to a fist, which may have their origin in any portion of the skin or its appendages. They are firm or soft, according to their composition, and are usually globular in shape. They may be attached to the skin by a broad, flat base, sessile, or they may be attached by a pedicle. They are most frequently new growths, benign or malignant, resulting from the hyperplasia of some of the elements of the skin or its appendages; they may be produced by the retention of the secretion of a gland, as in the so-called wen or steatoma. Their causes are many and various, and their evolution is usually slow, but exceptionally may be quite rapid.

The secondary lesions are: Squamæ (Scales; Fr., Squames; Ger., Schuppen); Crustæ (Crusts; Fr., Croutes; Ger., Borken, Krusten); Excorationes (Excoriations; Fr., Excorations; Ger., Hautabschürfungen); Rhagades (Fissures; Fr., Fissures; Ger., Rhagaden, Hautschrunden); Ulcera (Ulcers; Fr., Ulceres; Ger., Geschwüre); Cicatrices (Scars; Fr., Cicatrices; Ger., Narben).

Scales are laminated masses of horny epithelial cells which are being cast off from the epidermis, having lost their attachment to it through some morbid condition of the skin. They are of various

sizes and vary in color from silvery white to yellowish or grayish white. They may be fine and bran-like, furfuraceous, as in the desquamation which follows measles, or they may form extensive sheets, as after scarlatina, or they may occur in thick laminated plates, as in psoriasis. They may be readily detached or firmly adherent; they are usually dry and brittle, but they may be greasy; they vary much in amount, in some instances being cast off in great quantities. They are usually the result of inflammation, but may result from an abnormal dryness of the skin. They occur in a great variety of diseases of the skin, such as psoriasis, ichthyosis, eczema, the vegetable parasitic diseases, and some of the exanthemata.

Crusts are masses of dried exudate or other product of disease. Their presence is, with few exceptions, indicative of the preëxistence of moisture of some sort upon the skin. They are usually composed of dried serum, pus, or blood, occasionally of a mixture of sebum and epithelial scales, as in seborrhœa, and in a few instances they are made up almost entirely of vegetable fungi, as in favus. They may be quite thin, or form thick masses with uneven surface, or they may be laminated like the shell of an oyster, as in the rupial crusts of syphilis. They are yellow, greenish, brown, or black in color. Those formed of dried serum are quite light yellow in color; those composed of pus are yellow or greenish-yellow, while a dark-brown or blackish color usually indicates a considerable admixture of blood.

Excoriations are superficial losses of substance rarely extending deeper than the rete mucosum of the epidermis. They are the result of mechanical injury to the skin, usually inflicted by scratching with the nails or rubbing, or are the product of traumatism. They exhibit a variety of forms, dependent upon the mode of production; when due to scratching with the nails they are punctate or linear in shape; when the result of friction, they are usually irregular in outline. Their surfaces are frequently moist from oozing of serum or blood, which dries into thin reddish or brownish crusts. Quite frequently secondary infection takes place and suppuration occurs, with more or less inflammation of the skin and the formation of pustules. Excoriations are common lesions in many itching diseases, such as eczema, pruritus, pediculosis, and their form, distribution, and localization afford valuable aid in diagnosis.

Fissures are linear cracks in the skin, of variable length, usually limited in depth to the epidermis, but sometimes extending down into the corium. They occur most commonly in the natural furrows of the skin in parts subjected to movement, as the palms and soles and the fingers and toes; they are also frequently seen at the angles of the mouth and about the anus. They are especially apt to occur in such diseases as impair the elasticity of the skin through inflammatory thickening, hence are often observed in chronic eczema, psoriasis, and other inflammatory diseases, accompanied by infiltration of the skin. They may ooze and often bleed, and are frequently quite painful, interfering seriously with the movement of the parts affected.

Ulcers are circumscribed losses of substance in the skin extending through the epidermis into the corium or deeper, the result of disease. They vary in size from that of a small pea to the palm of the hand, and even larger. They may be round, crescentic, kidney-shaped, or serpiginous, with sharp-cut, infiltrated, elevated, or overhanging edges. They may be shallow, involving only the upper portion of the corium, or they may be deep, extending through the entire thickness of the skin into the subcutaneous tissue. They are accompanied by more or less discharge of serum, pus, or blood, which frequently dries into thick crusts, covering the ulcer. They are usually tender and painful, but these symptoms may be entirely absent, the patient experiencing but little subjective discomfort. Their course may be acute or chronic, although it is most commonly the latter. Ulcers occur in a large number of diseases of the skin, in the infectious granulomata, such as syphilis, tuberculosis, lepra, and in the malignant new growths, such as carcinoma and sarcoma. They are common lesions on the lower extremities, where they are frequently the result of varicose veins and of long-standing eczema; they may also occur as the result of defective innervation, the so-called trophic ulcer. They heal with the formation of scars.

Scars or **cicatrices** are new formations, composed of connective tissue, which follow and replace losses of substance, the result of disease or injury, extending into the corium or deeper. They are of all sizes and shapes, according to the lesions which have preceded them. They are red or pink when recent, but are white and glistening when old. They may be smooth and level with the normal skin, or they may be depressed and pit-like, or elevated, with uneven nodular surface; they may be soft and pliable or hard and unyielding. Occasionally they undergo contraction, producing great deformity; they may likewise undergo more or less marked hypertrophy, forming disfiguring growths known as keloid. Although scars usually follow some solution of continuity, they may result from the absorption of pathological tissue which has taken place without any previous breach in the skin. They are composed of connective tissue and contain neither papillæ, hair follicles, nor glands. Usually there are no subjective symptoms, but occasionally they are accompanied by itching or pain and tenderness. A knowledge of scars is frequently of much service in diagnosis, since a number of diseases, *e.g.*, syphilis, produce scars which are more or less characteristic.

The foregoing primary and secondary lesions are the elements out of which are made up the numerous eruptions characteristic of diseases of the skin, and these exhibit a great variety of combinations, which, with the type of lesion, give to each disease its peculiar stamp. An eruption may contain but a single form of lesion, when it is spoken of as a uniform eruption, or several types of lesion may coexist to form a multiform or polymorphous eruption. The manner in which the lesions are arranged varies greatly; they may be isolated

or discrete; may be arranged in solid rounded or discoid patches with well-defined borders, or in irregular patches with margins which gradually fade away into the surrounding normal skin; they may occur in rings, forming annular patches, or in segments of a circle which may join to form gyrate figures; or, lastly, they may be scattered about over the surface without any definite arrangement. The various patches which go to make up an eruption may exhibit more or less symmetry in their arrangement and distribution, both sides of the body being affected in an equal degree and presenting the same arrangement of the lesions, as is frequently seen in psoriasis. Eruptions may be unilateral or bilateral, general or universal, the term general being applied to those eruptions in which all regions of the skin are affected, but in which areas of normal skin are present, while the term universal is applied to those in which no portion of the skin is free from disease. They may be limited to certain regions, affecting these exclusively or in large part, while the remainder of the body remains free.

The distribution and arrangement of eruptions is largely conditioned by the anatomical structure of the skin, by the distribution of its nerves and blood-vessels. What has been described by Simon as the cleavage of the skin, the direction which the fibres of the corium take in various regions, plays an important rôle in this respect. Certain affections, such as herpes zoster and unilateral nævi of a certain type, follow the distribution of nerve branches, while the distribution of the terminal capillaries without doubt frequently determines the configuration of eruptions.

SUBJECTIVE SYMPTOMS

The subjective symptoms of diseases of the skin are itching, burning, formication, tingling, and pain; less frequently, increased sensibility, hyperæsthesia, or more or less complete loss of sensation, anæsthesia. These vary greatly in degree, and may be entirely absent, many diseases of the skin occasioning the patient no physical discomfort, or they may be of such severity and of such a character as to produce the greatest distress. The commonest of all the subjective symptoms is itching, which may be present in all degrees of severity; it may be a slight and occasional sensation, or may be so severe and long-continued as to drive the patient beyond all self-control in his efforts to relieve it. Severe itching is far more intolerable than pain, a fact seldom realized by any but the sufferer. Pain occurs with a fair degree of frequency in cutaneous diseases, especially in inflammations of the deeper parts of the skin resulting from local infections, and in some of the malignant new growths.

CHAPTER III

GENERAL ETIOLOGY

The causes of disease of the skin are exceedingly numerous and of the most varied character. They may exist within the organism itself and be produced by it as the result of disturbed function or abnormal metabolic processes. They may gain access to it from without, or they may be and remain wholly external to it, producing only local alterations. Not infrequently the morbid changes in the skin are but a part of some general disturbance—symptomatic diseases; or they may be limited to the skin alone—idiopathic diseases of the skin.

Certain conditions, both within and external to the body, while not directly productive of pathological alterations in the skin, favor its occurrence, and the importance of these varies greatly. Some of them are a necessary prerequisite, certain affections, although not directly produced by them, being unable to occur without their co-operation; while others are of comparative insignificance or even of doubtful influence. These indirect or predisposing causes of disease are: climate, season, race, heredity, age, sex, occupation. They all exercise more or less influence upon the incidence of cutaneous diseases, and in respect to some of them it is not always possible to determine whether they exert only a predisposing effect or are the actual direct causes of disease.

Climate exerts a decided predisposing influence upon cutaneous diseases. Certain affections, particularly those due to parasitic organisms, are much more frequently seen in the tropics than in temperate climes; certain of them are confined to these regions, and for that reason are called tropical diseases, while others, which, in temperate regions are comparatively insignificant affections, take on greatly increased virulence when transferred to the tropics.

Many diseases of the skin exhibit a more or less marked seasonal predisposition; examples of this are erythema multiforme, which is much more common in the spring than in other seasons of the year; herpes zoster, likewise, is seen much oftener in the spring and autumn; while certain forms of eczema and pruritus appear with the advent of cold weather, to disappear more or less completely in the summer.

Although little is known that is definite about the influence of race upon the occurrence of cutaneous disease, yet it exerts an undoubted effect. It has long been observed that fibrous overgrowth, such as keloid and related affections, is much more common in the negro than in the white races, while psoriasis, a common affection in Europeans, is quite unusual in the negro.

Heredity has long been regarded as an undoubted factor in pre-

disposing to disease, but it has lost much of its importance in this respect in recent years, owing to the rapid increase in exact knowledge concerning the causes of disease in general. Much of what was formerly looked upon as the result of heredity is now known to be the result of prolonged contact with affections feebly contagious. It would be an error, however, to deny to this factor considerable importance in predisposing to certain affections, such as ichthyosis, xeroderma pigmentosum, and, perhaps, psoriasis.

Age plays an important rôle in the occurrence of many affections of the skin. It is a well-known fact that certain diseases, like ringworm of the scalp, are confined to childhood; that certain others, like lupus vulgaris, almost always begin in this period of life, but continue in later years, while others, like epithelioma, are seen as a rule only after middle age. Although we are well aware of the influence of age upon the occurrence of disease of the skin, we are practically without any definite information to explain it.

Sex influences, sometimes very markedly, the occurrence of cutaneous disease, directly through peculiarities of anatomical structure and physiological function, and indirectly through occupation and social customs. Sycosis, for anatomical reasons, is a disease of men exclusively, while Paget's disease, although occasionally seen in men, is practically a disease of women. Certain affections, like acne vulgaris and acne rosacea, experience a more or less marked exacerbation at the menstrual period, while others, such as herpes gestationis (dermatitis herpetiformis) and chloasma, are peculiar to pregnancy.

Idiosyncrasy.—There is no doubt that idiosyncrasy, individual susceptibility to certain agencies which are innocuous to the majority of individuals, has a considerable share in predisposing to cutaneous disease as well as to disease of other organs and tissues. Examples of such susceptibility are by no means rare, being within the experience of every observer; they are observed in connection with a great variety of foods and drugs, plants and chemical substances, and the like. The nature of this susceptibility is as yet unknown, but recent observations make it extremely likely that it is largely, if not altogether, a manifestation of anaphylaxis.

Food and clothing are to be reckoned among the agencies which predispose to disease of the skin. These agencies, too, are at times directly provocative of disease. Insufficient food, or food of improper character, may so interfere with the general nutrition as to seriously diminish the skin's power of resistance to morbific agencies. Certain articles of food in certain individuals may act as powerful toxic substances producing various eruptions.

Underwear made of wool in many individuals causes a most annoying and persistent itching, and, indirectly, through the dyes which they contain, clothing may be the source of extensive and persistent inflammations.

Occupation must be included among the influences which predis-

pose to, or directly cause, disease of the skin. Indeed, it frequently plays a most important rôle in this respect. Many trades lead to disease of the skin through the unhygienic surroundings which are more or less inseparable from them, or, what is much more frequent, through the immediate and prolonged contact with chemical substances injurious to the skin employed in them. These latter form a large and most important group of diseases and are known as trade dermatoses. Examples of disease thus produced are extremely numerous and are met with in a great variety of occupations: makers of artificial flowers, dyers, tanners, candy-makers, photographers, metal polishers, as well as workers in many other trades of a similar kind, are more or less subject to inflammations of the skin as the result of their calling.

Disease of the skin occurs as the direct or indirect consequence of a considerable number of constitutional and visceral diseases. Disease of the kidneys, of the liver, of the gastro-intestinal tract, of the thyroid and adrenals, of the nervous system, diabetes, rheumatism, and gout, are frequently accompanied by disturbances in the skin which can be traced with more or less certainty to the internal disease with which they are associated. In some of these, for example, the inflammations which are so frequently complications of glycosuric diabetes, the relationship is readily demonstrated, but in others the demonstration is much less satisfactory, and the relationship is still largely a matter of theory and speculation. In a small proportion of cases of chronic nephritis, particularly chronic interstitial nephritis, in which the excretory function of the kidneys is greatly damaged, pruritus and eczema occur, which are presumably the consequences of defective elimination by the diseased kidneys. The furuncles, carbuncles, and other infections which are frequent occurrences in saccharine diabetes are the indirect result of the saturation of the skin with sugar, making it an especially favorable soil for the growth of microorganisms, while the genital eczemas, which are quite common, are the direct result of contact with the saccharine urine.

Disease of the liver, especially when it is accompanied by jaundice, may occasion severe pruritus; and xanthoma, when at all extensive, is very frequently associated with chronic jaundice.

That there is a more or less intimate relationship between gastro-intestinal disease and disease of the skin has long been observed, but we are still lacking exact information, for the most part, concerning the precise nature of this relationship, which is, without doubt, a very complicated one. The several forms of acne, urticaria, some eczemas, and pruritus, are examples of cutaneous disease which are frequently associated with, and more or less markedly influenced by, diseases of the stomach and intestines. A very curious and interesting relationship has been observed to exist between cancer of the stomach and liver and acanthosis nigricans, a curious pigmentary affection of the skin.

Rheumatism and gout have long been regarded as frequent and important factors in the causation of cutaneous diseases, but it is becoming more and more doubtful whether these altogether deserve their evil reputation. As to the former affection, there seems to be but little doubt that it is frequently associated with certain forms of eczema which may alternate with the ordinary joint symptoms of the disease, but there is just as little doubt that a considerable number of so-called gouty eczemas have nothing whatever to do with gout. As to rheumatism, the association of certain erythemata, such as erythema multiforme, with pain and inflammation of the joints, and the occasional association of psoriasis with a chronic arithritis, are quite commonly regarded as pointing to a rheumatic origin of these affections; but it is well to remember that not every arthritis is rheumatism; indeed, it is pretty certain that these joint affections are not rheumatism. Upon the whole, the evidence that rheumatism, properly so-called, plays any considerable rôle in the production of disease of the skin is, to say the least, unconvincing, in the author's opinion.

Disease of the ductless glands, such as the thyroid and the suprarenal capsule, by causing alterations in the quality or quantity of the so-called internal secretions, must be reckoned among the causes of morbid conditions of the skin. The profound alterations in the nutrition of the skin and its appendages, which occur in myxœdema and the extensive pigmentation of the skin and mucous membranes in Addison's disease of the suprarenal capsules, are examples of the close relationship between disease of such glands and disease of the skin.

The list of diseases of the skin due to microörganisms of various kinds is already a considerable one, and is constantly growing.

In some of these—syphilis, leprosy, and the exanthemata—the eruptive symptoms are but a part of a general infection. They are symptomatic eruptions, while in others, as in sporotrichosis and rhinoscleroma, the skin alone is invaded and the disease remains a strictly local one. In a few instances the organism produces at one time a general, at another a local, infection, examples of such being the bacillus tuberculosis and the blastomyces, both of which may at times cause a general infection with cutaneous lesions, at others strictly local symptoms. Certain fungi belonging to the order of moulds, such as the trichophyton, the achorion, the microsporon furfur, give rise to a group of diseases commonly designated vegetable parasitic diseases, which are always purely local affections. Diseases of the skin may likewise arise from the invasion of animal parasites, such as the acarus scabiei, the several varieties of pediculi, and a few other animal organisms of less frequent occurrence.

On account of its exposed situation, the skin is especially liable to disease from traumatism and from mechanical and chemical irritants of the most varied kind. The former is a common source of disease. The slight injury inflicted upon the skin by scratching, when long continued, is a frequent source of morbid change; the slight abrasions

which the skin so frequently suffers are quite commonly the starting point for eczemas and chronic ulcers, particularly in those debilitated by improper living, disease, or age.

Mere mechanical pressure, when long continued in the same region, may lead to pathological change in the skin, as in the corns and callosities which occur so frequently upon the soles from pressure of ill-fitting shoes, and upon the palms from pressure of some implement used in the daily work.

Although not commonly regarded as an irritant, water frequently acts as such upon the skin when applied often or for prolonged periods. Eczema of the hands is a common affection in washerwomen and others whose occupation compels them to immerse the hands frequently and for hours in water. Its injurious effects upon a skin already eczematous are well known to every dermatologist and frequently to the patient.

A considerable number of plants, such as the so-called poison ivy (*Rhus toxicodendron*), the primrose (*Primula obconica*), and some other varieties of the primula, contain substances which are violently irritating to the skins of many individuals, producing severe and extensive dermatitis. The chemical rays of light are likewise capable of exciting inflammation of the skin, and of causing other morbid changes, some of them of a quite special character; for example, the alteration in the process of keratinization often followed by epitheliomatous change, as seen in the so-called sailor's skin. Exposure to the X-ray and radium, especially the former, produces a dermatitis with which we have become only too familiar in the last few years. This dermatitis may vary from a mild and transient erythema to complete destruction of the skin, and in the chronic forms arising from repeated exposures may terminate in epithelioma with all its disastrous consequences.

CHAPTER IV

GENERAL PATHOLOGY

The pathology of the skin does not differ in essentials from the pathology of the internal organs of the body. Since the skin responds to morbific influences in the same manner as other tissues, and brings to its defence against disease the same agencies, the same morbid processes, anæmia, hyperæmia, inflammation, hypertrophy, atrophy, are observed in it as in the viscera. But while the pathological processes in the skin and the mechanism of their production are similar to those which take place in diseases of the viscera, the tissue alterations which result from these are frequently different, largely, but not exclusively, because of peculiarities of anatomical structure and physiological function. The histopathology, therefore, of cutaneous disease frequently presents important variations from that of other tissues.

The epidermis may undergo hypertrophy, either as a whole or in some one of its component layers. Hypertrophy of the stratum corneum or horny layer, designated *hyperkeratosis,* is a common pathological condition. It may be a congenital and generalized affection, as in ichthyosis, or it may be acquired and limited to circumscribed areas, as in callosities and cutaneous horns. There is not only a more or less marked increase in the number of the horny cells, but they have undergone a qualitative alteration; owing to an increase in the keratin they are firmer than normal and have lost to some extent their cohesiveness, so that they may be easily separated. Circumscribed hyperkeratoses are extremely common lesions, and result from a variety of causes. Lesions of this kind are frequently seen upon the palms and upon the soles, in the former as the result of pressure from the use of certain tools, in the latter from ill-fitting shoes. They may result from the ingestion of certain drugs, such as arsenic, which produces peculiar, corn-like lesions upon the palms and soles, and from senile change in the skin—as in the so-called senile keratosis. It is an interesting and important fact that epithelioma is prone to follow certain circumscribed hyperkeratoses, especially those following the prolonged use of arsenic and the senile form. Hyperkeratosis may exist alone or be associated with other morbid conditions. In angiokeratoma, in addition to the increase in the horny layer, there is likewise an increase in the blood-vessels of the papillæ of the corium; and keratosis of the palms and soles is frequently associated with a marked hyperidrosis of these regions. Hyperkeratosis may occur in the hair follicles and about the orifices of the sweat-ducts.

In a number of affections of the skin, chiefly inflammatory in character, cornification takes place imperfectly. The nuclei of the horny cells do not completely disappear, as under normal conditions; there

is an absence of keratohyalin granules and a diminution of cohesion between the cells, so that desquamation readily takes place, and small collections of leucocytes are frequently present between the cells. This condition, which is known as *parakeratosis,* is always preceded by pathological alterations in the rete mucosum and is observed in eczema, psoriasis, and some other affections with desquamation or scaling. Anomalous forms of cornification occur in the disease first described by Darier under the name of follicular vegetating psorospermosis and in epithelioma (molluscum) contagiosum. In the former certain of the horny cells about the mouths of the follicles are transformed into large round bodies with a double wall resembling certain protozoa, for which they were at one time mistaken.

Hypertrophy of the rete mucosum, *acanthosis,* occurs both as a benign and a malignant process. In the former, while the cells are increased in number, they still retain the ordinary characteristics of the cells of this layer, but in the latter the overgrowth is accompanied by alterations in the cells themselves; they lose their intercellular fibrils so that they are no longer connected with one another; they become smaller and round or oval instead of polygonal, and undergo various forms of degeneration with frequent cell-inclusions. In malignant overgrowth of the rete the columnar basal layer of cells no longer forms a sharp dividing boundary between the epidermis and the corium, but is invaded and broken up by the multiplying altered cells from above and by leucocytes from the corium below.

Circumscribed hypertrophy of the rete may occur as a congenital affection, as in soft nævi, or as an acquired condition, as in warts and condylomata. In certain affections having their seat in the corium, such as the infective granulomata, tuberculosis, syphilis, and leprosy, extensive overgrowth of the rete, resembling in many particulars malignant hypertrophy, occurs. Long branching processes composed of epithelium extend down deeply into the corium, but the cells usually retain their special characters. Extensive diffuse acanthosis frequently occurs in inflammations of the skin, such as eczema and psoriasis, often accompanied by hyperkeratosis, or still more frequently by *parakeratosis.*

Atrophy of the rete mucosum may occur as the result of pressure from within or without. It may occur as an idiopathic affection associated with atrophy of other parts of the skin, and is frequently the result of advancing years, when it is known as senile atrophy. The thickness of the layers of epithelial cells is diminished, sometimes greatly, and the interpapillary prolongations are markedly shortened so that the undulatory boundary between it and the corium approaches a straight line.

In a large number of inflammatory conditions of the skin, such as eczema, herpes, and the various forms of dermatitis arising from contact with chemical substances and plants, œdema of the rete mucosum

takes place, which, when considerable, frequently leads to the formation of lesions peculiar to the skin and mucous membranes, known as vesicles. This œdema may be either intercellular, intracellular, or both. In the former the fluid distends the intercellular spaces to form unilocular cavities which may become multilocular by the coalescence of several adjoining lesions. They are filled with serum and a variable number of polymorphonuclear leucocytes with, in certain bullous diseases, such as dermatitis herpetiformis and pemphigus, a considerable number of eosinophiles. In the intracellular œdema the cells themselves are filled with fluid and contain small cavities which coalesce to form multilocular vesicles. Both forms of œdema and both varieties of vesicles frequently occur together. The multilocular form of vesicle is best seen in the vesicles of variola and varicella.

In the vesiculation which occurs in varicella, variola, and herpes zoster, a peculiar alteration of the epithelial cells about the sides and bottom of the lesions takes place, which transforms them into large, round or pear-shaped bodies frequently with double-contoured walls and a cavity filled with large round nuclei varying in number from five or six to a score or more. The " ballooned " cells of herpes zoster were regarded at one time by Pfeiffer as a form of protozoön, and the probable cause of that disease; their epithelial nature, however, has been definitely established by numerous observers, although the exact nature of the degeneration is still undetermined.

The situation of vesicles varies considerably. They may be immediately beneath the horny layer of the epidermis or anywhere between the horny layer and the papillary layer of the corium.

Bullæ, or blebs, may be regarded as exaggerated vesicles, since the mechanism of their production is practically the same as that of the latter. The roof of the bleb may be composed of the stratum corneum only, or it may consist of the entire thickness of the epidermis which has been lifted *en masse* by exudation from the papillæ of the corium. Lesions of this sort are present in pemphigus, dermatitis herpetiformis, and in the severe forms of dermatitis resulting from external irritants, such as certain plants like the *Rhus toxicodendron* and many chemical substances. In the bullæ of pemphigus and of dermatitis herpetiformis, many eosinophiles are commonly present.

Pustules differ but little, if at all, in their structure from vesicles. Indeed, a vesicular stage often precedes the pustules, the fluid contents being clear or only slightly turbid at first, becoming purulent later. In certain cases, however, the pustular lesion begins as such, as in certain forms of impetigo (Bockhart's impetigo).

In dermatitis, inflammation of the skin, the pathological changes which take place in the corium are for the most part similar to those which occur in inflammation of other tissues—dilatation of the blood-vessels, with exudation of plasma and leucocytes. The cellular exudate is usually most abundant in the neighborhood of the vessels, the hair follicles and the sweat-glands; less frequently it is uniformly dis-

tributed throughout the corium. It is composed of polymorphonuclear and small mononuclear cells, some of which are lymphocytes and others are probably derivatives of the connective-tissue cells, although there is considerable difference of opinion concerning the nature and origin of the small, round mononuclear cells.

Other types of cell are present in certain diseases which have more or less special significance. One of the most important of these, present especially in chronic inflammations in infective granulomata and certain malignant affections, is the plasma-cell. This is a large, round, frequently cuboidal cell with a large, round or oval nucleus eccentrically situated. In certain affections, such as syphilis and Paget's disease, these cells may be very numerous, forming the principal part of the exudate; their origin is still a matter of dispute.

A more or less considerable increase in the number of "mastzellen" occurs in a number of diseases of the skin. These, which are normally present in small numbers in the corium, are large, round, oval, spindle-shaped, and frequently branched cells in the protoplasm of which are numerous basophilic granules. In urticaria pigmentosa the cellular exudate is made up almost entirely of these cells. Their exact significance is still quite uncertain.

Giant-cells of the Langerhans type are met with in the corium in the various forms of tuberculosis of the skin so constantly as to be a characteristic feature of this affection, but their presence is by no means to be regarded as certain proof of the tuberculous character of the tissue in which they are found, since they are seen, although much less frequently, in others of the infective granulomata, syphilis, lepra and blastomycosis. Other types of giant-cell in which the nuclei are centrally instead of peripherally situated, the so-called chorio-plaques, are found likewise in some of the infective granulomata, such as lepra and yaws.

The fibrous elements of the corium, the collagen, may undergo diffuse hypertrophy, as in scleroderma and elephantiasis, or there may be a circumscribed increase of these, as in keloid. Atrophy of the collagen occurs in many cutaneous affections.

The elastic fibres of the corium, so far as our present knowledge goes, are not subject to hypertrophy, but more or less atrophy takes place in many diseases. It disappears in the area occupied by the cellular infiltration about malignant growths, such as carcinoma and sarcoma, and is absent in atrophic scars. Rupture of the elastic fibres may occur from over-distention of the skin, as in the striæ atrophicæ of pregnancy.

Both the cellular and fibrous elements of the corium may undergo various forms of degeneration, such as fatty, hyaline, colloid, and myxomatous degeneration, which do not differ essentially from those occurring in other tissues. Fatty degeneration of the connective-tissue cells of the corium is one of the principal pathological changes present in xanthoma tuberosum, while the same process, affecting

the muscle-cells of the lids, is present, according to Pollitzer, in xanthoma planum. Colloid or hyaline degeneration takes place in the cells of a number of affections which have their seat in the corium, such as syphilis, rhinoscleroma, and diseases attended by suppuration.

Colloid degeneration of the fibres of the corium has been observed chiefly in connection with so-called colloid milium.

Myxomatous degeneration occurs in various new growths, both benign and malignant, and in myxœdema.

In many diseases of the skin the fibrous and elastic elements, the collagen and elastin, undergo degeneration, which causes them to lose their normal affinity for acid dyes and to become basophilic; the collagen is transformed into collacin and collastin, the elastin into elacin. This degeneration may very well be demonstrated in the senile skin by the use of appropriate staining methods. Our knowledge, however, of these degenerations is still very incomplete.

Quantitative and qualitative alterations of the pigment of the skin occur as an accompaniment or sequel of many cutaneous affections, usually associated with other pathological changes of various kinds, but in a few instances alone. The pigment is of two sorts, viz., an iron-containing one, always pathological, composed of yellow crystalline granules, *hæmatoidin,* and dark amorphous granules, *hæmosiderin,* and an iron-free pigment, *melanin,* which exists normally in the skin in certain regions. Pigmentation from deposit of hæmatoidin and hæmosiderin in the tissues follows extravasation of blood, such as occurs in purpura and after contusions, when it is usually of short duration. It also occurs as a sequel of long-standing inflammations accompanied by venous stasis, such as chronic eczema of the lower extremities, especially when associated with varicose veins, when it is apt to be permanent or of long duration. A more or less general pigmentation of the skin, due to hæmosiderin, occurs in bronze diabetes (hæmochromatosis).

The origin of melanin is still a matter of debate. There are two theories concerning its derivation, one that it is derived from the hæmoglobin, the other, that it is the product of epithelial cells in the epidermis. Hyperpigmentation due to an increase of melanin accompanies or follows many affections of the skin, such as certain forms of chronic eczema, lichen planus, and neurofibromatosis (von Recklinghausen's disease). It occurs to a marked degree in certain nævi and malignant neoplasms, such as melanosarcoma and pigmented epithelioma, which, as a rule, exhibit extraordinary malignancy. It accompanies or follows certain general diseases, such as Addison's disease and syphilis.

Hyperpigmentation may result from the ingestion of certain drugs, such as arsenic, which produces a diffuse, more or less general dirty brown discoloration of the skin when given in considerable quantities for a length of time. Arsenical pigmentation is apt to be most marked in regions subjected to mechanical irritation or inflammation.

Pigmentation of an entirely different kind may result from the deposit of metallic particles in the skin following the continued use of certain salts of the metals, such as nitrate of silver, which produces a slaty blue discoloration.

In all the various forms of hyperpigmentation the pigment occurs as golden-brown to dark brown amorphous granules which are most abundant in the lower layers of the rete mucosum, especially in the basal or columnar cells. They may be so abundant as to completely obscure the outlines of the cells containing them. Pigment granules are also present lying free between the epithelial cells in the intercellular spaces, and in certain stellate cells, the so-called *melanoblasts* of Ehrmann. The papillary layer and upper portion of the *pars reticularis* of the corium also contain pigment, but rarely in quantities comparable with that present in the epidermis.

Absence, or a marked decrease of pigment, occasionally occurs as an inherited congenital defect, as in albinism, or it may occur in circumscribed areas as an acquired condition, usually preceded by a temporary increase, as in vertiligo.

According to Ehrmann, hæmosiderin is found only in the connective-tissue spaces and secondarily in the leucocytes, while melanin is situated within the epithelial cells and in the melanoblasts.

CHAPTER V

GENERAL DIAGNOSIS

An accurate diagnosis must of necessity precede the rational treatment of cutaneous, as well as of visceral disease, and this can only be arrived at by careful and methodical examination, not only of the disease under consideration, but of the patient as well. If we are to avoid error and arrive at trustworthy conclusions, a certain orderly procedure should be observed.

The examination, when possible, should be made by daylight, since most colors are altered by artificial light, and some, such as yellow, may not be visible at all, unless the light is quite white, like the electric arc light. Every portion of the eruption should be seen, since to examine but a part of it is to invite error, for the same eruption may, and frequently does, exhibit marked differences according to locality. One should not be satisfied with the patient's statement that all of the eruption is precisely like that exposed to view; one should see for himself. Not only should the whole eruption be examined, but in doubtful cases the entire cutaneous surface should be subjected to careful scrutiny; in no other way can one so quickly and certainly learn its extent, distribution, and localization. Not infrequently faint, but entirely characteristic, lesions may be present of which the patient is entirely unaware, or which, for some reason, he desires to conceal. Indeed, it is an excellent rule at the first visit to strip the patient, if it is a man or child. Of course, when the patient is a woman we must often be satisfied to inspect the skin in sections.

Age, sex, race, occupation, habits of life, should all be carefully noted, since these frequently have an important bearing on the diagnosis.

Age.—A considerable number of diseases occur far more frequently in childhood than in adult age, and some are practically confined to this period of life. The exanthemata, impetigo contagiosa, and ringworm of the scalp are diseases of childhood, while lupus vulgaris, and some others of the tuberculous affections of the skin, although not limited to this period, usually have their beginning before puberty. On the other hand, acne vulgaris is practically never seen before puberty, and epithelioma is uncommon before forty years of age.

Sex.—For purely anatomical reasons, sycosis, both the parasitic and non-parasitic varieties, is exclusively a disease of the male sex, while Paget's disease, impetigo herpetiformis and chloasma are so rarely observed in the male as to be practically affections of the female sex. A certain variety of dermatitis herpetiformis, herpes gestationis, as its name indicates, is confined exclusively to women.

Race.—Keloid is far more frequently seen in the negro than in

the white race, while psoriasis is extremely uncommon in the pure-blooded negro. Multiple hemorrhagic sarcoma of the skin exhibits an extraordinary predilection for the Hebrew race.

Occupation.—Those exposed to contact with the innumerable chemical substances used in the various arts and trades are much more likely to suffer from dermatitis and eczema than those whose occupation does not so expose them. Those whose occupation exposes them to the rays of the sun and to the wind are much more apt to suffer from certain degenerative changes of the skin leading to malignant disease.

The patient's habits, especially as to his eating and drinking, also largely influence his liability to certain diseases, such as acne rosacea, pruritus, and those affections like ecthyma which depend upon secondary infections.

The character of the primary lesions should be carefully noted, *i.e.*, whether they are macules, papules, vesicles, pustules or blebs, and they must be carefully distinguished from secondary lesions. The character of the primary lesions may best be observed in those of recent origin and when the eruption tends to occur in patches in which the individuality of the lesions is lost, in the discrete lesions about the border of the patch or some little distance from it.

In studying any eruption it should be noted whether it is a uniform one, *i.e.*, that composed of but a single kind of lesion, as in lichen planus and psoriasis, or whether it contains several varieties of lesion, as in scabies and eczema. The distribution, arrangement, localization and evolution are all matters of more or less significance in diagnosis. For example, a vesicular eruption distributed over the course of the brachial plexus, or over the intercostal nerves, arranged in groups, is distinctive of herpes zoster. A multiform eruption between the fingers, on the flexures of the wrists, on the anterior fold of the axillæ, and, in the male, upon the shaft of the penis, is almost certainly scabies.

The presence or absence of secondary lesions, such as crusts, scales, excoriations, should be noted. The presence of crusts is almost always indicative of precedent moisture, serum, pus, or blood, while excoriations, especially linear ones, point unerringly to the existence of more or less severe itching, and their localization often affords a clue to the nature of its cause.

Not only should the history of the disease under immediate consideration be carefully gone into, but, what is just as important, indeed sometimes more so, the patient's previous medical history should be carefully considered, not only as to previous cutaneous diseases, but as to the constitutional affections from which he may have suffered. The presence or absence of the same or other cutaneous affections in other members of the family or household should be inquired into with a view to learning whether heredity or contagion plays any part in his disease. Inquiry should be made as to whether he has had treatment, local or internal, before coming under observation, and, if so, what has

been the nature of it, and more especially what drugs, if any, have been taken internally. One should always be on the lookout for drug-eruptions which may complicate the diagnosis greatly. Eruptions are frequently greatly altered by local applications employed by the patient himself, or ordered by the previous medical adviser, which frequently mask the original disease by an artificial dermatitis. Under such circumstances the original affection only becomes manifest after the artificial condition subsides, either from judicious treatment or spontaneously.

While the history of the case is without doubt often of great assistance in arriving at a correct diagnosis, it is almost as often of no use or, worse, misleading. Since patients are rarely accurate observers; since they often have notions of their own, which are erroneous concerning the nature and origin of their maladies and which materially influence their statements; and since they not infrequently endeavor to mislead the physician when they suspect their affection to be of venereal origin, or when they are the subjects of hysteria, the exercise of a rational skepticism in the matter of histories is much to be preferred to a too easy credulity.

Valuable information may occasionally be obtained from an inspection of the mucous membranes adjoining the skin, more especially in cutaneous syphilis. The nature of a doubtful or only faintly visible eruption may at once be made plain by the finding of a mucous patch on the labial or lingual mucous membrane or a flat condyloma at the verge of the anus.

The employment of tuberculin after the methods of von Pirquet and of Morro is often of great use in the recognition of the tuberculous affections of the skin, and complement fixation (Wassermann test) is always to be employed in obscure or suspected syphilis of the skin. Although far less useful than the Wassermann reaction, intradermic injections of luetin, killed cultures of the spirochæta pallida are also useful, especially in the diagnosis of late cutaneous lesions of syphilis.

The microscope is an invaluable aid in the diagnosis of cutaneous maladies, but its successful use demands not only a thorough knowledge of microscopic technic, but an extensive acquaintance with the histopathology of the skin. With the aid of local anæsthesia, it is entirely practicable to excise small portions of diseased tissue and subject them to microscopic study, a method of diagnosis frequently of the greatest value, and one which should be employed in all doubtful and obscure cases. The examination, however, of crusts and scales and hair for the vegetable parasites requires only the most elementary knowledge of the use of the microscope.

The recently employed intracutaneous injection of certain soluble proteins promises to add a diagnostic procedure of value in certain inflammations of the skin, more particularly certain eczemas and urticaria and other affections exhibiting angioneurotic phenomena.

CHAPTER VI

GENERAL THERAPEUTICS

Since pathological processes and the mechanism of their production are essentially the same whatever the tissue involved, and since the many causes of disease produce their effects in practically the same manner in diseases of the skin as in diseases of the internal organs, the same general principles which govern the treatment of the latter apply to the treatment of the former. The chief difference between the therapeutics of cutaneous maladies and the therapeutics of general diseases lies in the fact that in the former our remedies are very frequently applied directly to the diseased parts. Internal remedies are, in the great majority of cases, given in diseases of the skin, not for their direct effect upon the cutaneous disease, for a comparatively small number of drugs are capable of exerting any curative effect in this manner, but for their effect upon either the system at large, or upon the functions of the various organs with disease of which cutaneous affections are so often directly or indirectly connected. It should be constantly borne in mind that there are just as few specifics for diseases of the skin as for other diseases.

In many affections, perhaps in most, both local and internal remedies are indicated, and frequently both are equally valuable. It should be remembered, however, that a large number of cutaneous affections are strictly local diseases, in no way dependent upon general conditions, and therefore curable, if curable at all, by local treatment. Under such circumstances, of course, internal treatment is useless and may be harmful.

Since, as has already been pointed out, diet is frequently the direct and still more frequently a contributing cause of many affections of the skin, this should be regulated with care. It is useless to prescribe lotions and ointments for an acne rosacea, even the most effective, if the patient is permitted to indulge in sweets, pastry, tea and coffee and alcoholic drinks, and the vulvar eczema which occurs in a glycosuric woman will be treated in vain so long as sugars and starches form a part of her diet. As is well known, shell-fish, strawberries, pork, honey and other articles of food may, in certain individuals, give rise to urticaria, and these are, of course, to be rigidly excluded from the diet of those who suffer from this affection. Recent studies make it seem most probable that food allergy, or protein sensitization, plays a very important rôle in certain inflammatory affections of the skin, especially those associated with angioneurotic symptoms. In acutely inflammatory conditions of the skin, especially when large areas are involved, the diet should be of the simplest kind: meats should be taken in great

moderation, and oftentimes a liquid diet will be found best, with plenty of milk, while tea, coffee and alcohol are best omitted altogether.

The gouty and the rheumatic who suffer from diseases of the skin, especially the former, should carefully observe a regimen suited to those conditions.

After all, however, there are many affections of the skin in which the diet is a matter of no importance.

Attention should be paid to the patient's clothing, especially the underwear, which may directly cause certain disturbances, either because of the material of which it is composed or because of the dyes with which it is not infrequently colored. Infants are often too warmly clothed, so that the skin is continually bathed in perspiration and the sweat-glands are constantly over-stimulated, producing a condition known as miliaria. Many individuals find woollen underwear intolerable, many cases of the so-called winter itch being nothing more than the irritation produced by woollen undergarments, and in inflammatory diseases wool should not be worn next to the skin.

Internal or Constitutional Treatment.—In the internal treatment of diseases of the skin the same drugs are, for the most part, employed as in the treatment of other affections and for the same reasons—to control inflammation, to relieve pain or other distressing sensations, to combat infection by destroying or neutralizing the effects of pathogenic organisms. There is a large number of drugs which are useful in diseases of the skin, and a small number have a more or less direct effect upon this tissue. Alkalies, such as the citrate or the acetate of potash, are remedies frequently found useful in extensive inflammations of the skin accompanied by itching or burning, or in those accompanied by symptoms of gout or rheumatism. They should be given in considerable doses, sufficient to produce and maintain alkalinity of the urine, but their administration should not be continued for too long a period without interruption, as they are likely to produce gastric disturbance and anæmia when given over long periods.

Laxatives and cathartics form a most valuable group of remedies in the treatment of many affections of the skin, and are especially useful in eczema and acne. The saline laxatives may be most conveniently and agreeably administered in the shape of some one of the many waters which are to be found in the market. Fractional doses of calomel followed by a laxative are often of the greatest use in eczema, especially the eczemas of children.

The preparations of iron are frequently of service in diseases of the skin when these occur in anæmic subjects, and in such affections as are accompanied or followed by general debility.

Quinine is of great use in a number of cutaneous affections, such as pemphigus, exfoliative dermatitis, lupus erythematosus, in those accompanied by evidences of malarial infection, and as a general tonic.

Cod-liver oil is a remedy of decided value, especially in children whose nutrition is impaired. In pustular eczema of children, associated with enlargement of the lymphatic glands, it is a remedy of undoubted value. It is also capable of rendering decided service in those forms of acne characterized by deep-seated violaceous lesions, slow in course, which occur in those with pale doughy skins and swollen glands. It was regarded by Hebra as a specific in lichen scrofulosorum.

The iodides of sodium and potassium are of especial value in the skin lesions of late syphilis, but are of little if any use in the early eruptions, a fact of which the majority of physicians seem to be unaware, if one may judge from the frequency with which they are prescribed in the secondary period of this malady. They are also sometimes of decided value in psoriasis, but only when given in large doses.

While mercury displays its remedial value in diseases of the skin, chiefly in those due to syphilis, it is often of decided use in other affections. In many cases of eczema accompanied by constipation and coated tongue, fractional doses of calomel, or blue pill, followed by a saline, will often be accompanied by benefit.

Remedies which diminish intestinal putrefaction, such as salol, salicylate of bismuth, creosote, guaiacol, or betanaphthol, are given in those affections which are attributed to absorption of putrefactive products from the intestinal tract. It seems doubtful, however, whether these are of very much value.

Among all the drugs which have been employed internally in the treatment of diseases of the skin, arsenic for a long time held the first place. Its history as a remedy in diseases of the skin practically began with the opening of the last century, and for years it was regarded as a remedy which could be given with advantage in every affection of the skin. Its popularity began to decline in the last quarter of the past century, owing, no doubt, to the great influence of Hebra, who criticised the use of it in every cutaneous disease, and at the present time its use is very much restricted as compared with that of fifty years ago. Even yet it is the one internal remedy to which the general practitioner is apt to have recourse in a very large number of diseases of the skin. In eczema, an affection in which it was at one time largely employed, its use is of doubtful efficacy. If useful at all, it is only in the dry scaly forms with thickening and scaling, and should never be employed in the acute forms or when an acute exacerbation is present. In psoriasis it is often remarkably effective, causing the eruption to rapidly disappear, but it is not curative, nor does its continued use prevent relapses. In pemphigus, in lichen planus, in dermatitis herpetiformis, it is often of great use. It may be given in a number of forms—as arsenic trioxide, the solution of potassium arsenite (Fowler's solution), the solution of sodium arsenate, cacodylate of soda, atoxyl and salvarsan (arsenobenzol). Cacodylate of soda and atoxyl

are especially adapted to hypodermatic use. By the use of these last two, enormous amounts of arsenic may be introduced into the system without toxic effect, but it is doubtful whether, except in certain specific diseases, they produce any therapeutic effect which cannot be obtained by the use of the older preparations. While undoubtedly a most useful drug in a limited number of diseases, it must not be forgotten that its prolonged use is not unattended by untoward and even dangerous effects. The long-continued use of arsenic produces marked pigmentation of the skin and a peculiar form of keratosis, usually confined to the palms and soles, which may become the seat of epithelioma in time. The most effective way to administer this drug is by hypodermatic injection, or, as in the case of arsenobenzol, intravenously.

Antimony has been employed in the treatment of inflammatory affections of the skin, especially when the symptoms of inflammation are acute. According to Ringer, Murrell and Nunn, it exerts an effect similar to arsenic upon the epidermis. Its use is contraindicated in the debilitated, as it is a powerful depressant. Quite recently it has been found to exert a specific effect upon certain infections of the skin, such as oriental sore and closely related tropical diseases, due to the organism described by Leishman. It is used as tartar emetic and given intravenously. From a recent experience the author is inclined to believe that it may also be used locally with good effect in such maladies.

Phenol, the various salicylates, and salicin are internal remedies of decided value, especially the two latter, in affections such as psoriasis, lichen planus and pruritus, salicin being perhaps the most valuable of the three, since it may be given in larger doses for considerable time without disturbing the stomach or producing other untoward effects.

Acetanilid, antipyrin, and phenacetin are frequently of decided service in relieving itching and burning in such affections as urticaria and pruritus; indeed, in the former they often afford great, although often only temporary, relief.

Sulphur has long had a great reputation among the laity as a remedy in diseases of the skin, but it is more than doubtful whether it deserves an important place among the useful internal remedies. Its internal administration is, however, highly recommended by Crocker in hyperidrosis and other eruptions connected with sweating. Sulphide of calcium, which was recommended by Ringer and others as a remedy in furunculosis and other diseases accompanied by the formation of pus, is, in the author's experience, a useless drug. Ichthyol and thiol, which owe whatever therapeutic properties they possess to sulphur, have been recommended by Unna and others for a great variety of cutaneous affections, but the disagreeable odor of the former and the doubtful efficacy of both limit their use decidedly.

Some of the ductless glands, such as the thyroid and the adrenals, either in substance or as extracts, are useful to a limited degree in

dermatological therapeutics. The former produces marvellous results with which all are acquainted, in myxœdema. It has also been used with occasional good effect in psoriasis and scleroderma.

The hyperdermatic injection of suspensions of killed microörganisms, such as the bacillus tuberculosis, staphylococci, streptococci, bacillus acne, and other organisms concerned in the production of cutaneous infection, according to the method of Wright has, in recent years, been attended occasionally with brilliant results, but these results are far from uniform, most probably because our knowledge concerning the etiological relationship of many of these organisms to the diseases in which they are found is still inexact. The method, erroneously called vaccine treatment, is one of considerable promise, although it has thus far fallen short of expectations. Suspensions made from the organism obtained from the patient's own lesions, so-called autogenous vaccines, are much to be preferred to the stock vaccines, but, no doubt, when our knowledge of the infecting organisms is more exact, the latter will be found quite as effective as the former. The diseases in which this method of treatment has been found useful are furunculosis, acne, and sycosis vulgaris. Doubtless this list will be greatly increased in the near future.

Within the past five years injections of serum, obtained from other individuals, or from the patient's own blood (autoserum), have been employed in a number of affections, such as pemphigus, dermatitis herpetiformis, especially herpes gestationis, chronic urticaria, psoriasis, chronic eczema, and some other chronic itching diseases, with asserted remarkable results (Veiel, Linser, Spiethoff, Rübsamen, Gottheil and Satenstein, and others). Foreign serum, especially horse serum, has been employed in hemorrhagic purpura with occasional beneficial results, but in most instances it has failed. The results of serum therapy are of such uncertain character that the whole matter must for the present be regarded as still in the experimental stage. The withdrawal of the blood, the preparation of the serum and its injection should be carried out with strict asepsis. From 20 c.c. to 60 c.c., and even more, are injected intravenously at each injection.

External or Local Treatment.—The direct application of remedial agents to the diseased parts, external treatment, plays a most important rôle in the treatment of diseases of the skin. Even in those affections in which internal remedies are of most importance, the use of local applications will also frequently be found indispensable, not only for the relief of symptoms, but as an important aid to cure. Many diseases of the skin yield more or less readily to local remedies, and in many more both local and internal treatment are requisite to recovery. It is in the use of local remedies that dermatological therapeutics differ from the therapeutics of constitutional and visceral diseases, and success in their employment is largely a matter of experience, so that, other things being equal, he will best succeed with these who has had the largest experience in their use.

In applying remedial agents to the skin, many and various vehicles are employed, such as baths, washes or lotions, ointments or salves, dusting powders, pastes, varnishes, soaps, gelatins and plasters, and the selection of the vehicle in any given case is, by no means, a matter of indifference; indeed, it is oftentimes secondary in importance only to the selection of the remedy to be incorporated with it.

It should always be borne in mind that the therapeutic effect of many external remedies, like that of many internal ones, varies greatly according to the dose. Weak preparations of salicylic acid act as a stimulant to keratinization, strong ones are keratolytic, softening the horny layer of the epidermis and causing its exfoliation. Menthol ointment, two or three grains to the ounce, is markedly sedative, and especially useful in pruritic diseases, while one containing ten or fifteen grains is decidedly irritating.

In the treatment of acute inflammations of the skin washes or lotions, as a rule, will be found to be more agreeable to the patient, and at the same time more effective than ointments, while in chronic affections, attended by considerable tissue-change, the reverse is usually true. Exceptions, however, are not infrequent.

Baths may be employed in diseases of the skin for the purpose of removing such pathological products as scales and crusts in order to facilitate the application of local remedies. When used for this purpose, they consist of plain water, or water to which some alkali, such as bicarbonate of soda, or biborate of soda, has been added, the latter being preferable when the accumulation of scales or crusts is at all considerable. The indiscriminate use of baths in acute inflammatory affections of the skin is often injurious, although the first effect may be agreeable. Baths to which bran, starch, or other mucilaginous substance has been added are frequently employed as palliatives in inflammatory affections attended by itching and burning. The continuous bath in which the patient is immersed for several hours or even days at a time is useful in extensive inflammations of the skin, as in pemphigus and extensive burns.

It is frequently necessary to remove scales and crusts from the skin before local treatment can be properly employed—to apply an ointment or lotion to a surface covered by thick crusts for the purpose of influencing the diseased skin beneath is futile. Water, either warm or cold, alone or with soap, is frequently sufficient, but in many inflammatory affections, such as eczema, the application of soap and water is frequently harmful and should be avoided when possible. In certain situations, such as the scalp, it may be difficult to remove the accumulation of crusts and scales by simple washing without first softening these. For this purpose we may employ starch poultices made with a saturated solution of boric acid, or the liberal application of bland fats, such as olive oil, oil of sweet almond or some one of the petroleum fats, such as vaseline or cosmoline. Where a considerable surface is involved, a prolonged tepid bath of plain water or, better,

one made slightly alkaline by the addition of three or four ounces (90.0 or 120.0) of sodium bicarbonate or borax to thirty gallons (120 litres) of water may be used with good effect.

Dusting powders are composed of various vegetable and inorganic powders, such as starch, lycopodium, oxide of zinc, subcarbonate or subnitrate of bismuth, or talcum. The inorganic powders are preferable usually to the vegetable ones, because they do not readily undergo decomposition in the presence of heat and moisture. These are employed as protectives in inflamed conditions of the skin, or as absorbents, and may be used either alone or combined with medicinal substances, such as various antiseptics like boric acid, salicylic acid, or with sedatives such as phenol or menthol, when it is desired to allay itching and burning. To obtain the best results from the use of such powders they should be liberally applied.

Lotions or washes are aqueous or alcoholic solutions, usually the former, of various medicinal substances which are applied to the diseased parts by mopping or spraying and then allowed to evaporate. To apply them on lint or gauze, which is then covered over with a bandage or some impervious covering, such as paraffined paper or oiled silk, is to misuse them, since it defeats one of the purposes for which they are used, viz., cooling by evaporation. They are no longer lotions, but fomentations. The addition of insoluble powders, such as oxide of zinc or subnitrate of bismuth, is often desirable, since these form a protective covering after the evaporation of the water and prolong the effect of the substance in solution, or the lotion may be immediately followed by the application of a dusting powder. While often a most useful form of local application, their effect is usually much less lasting than other local remedies, such as ointments, and is also quite superficial. They are indicated chiefly in acute affections and those in which the tissue changes are superficial, and are employed for their cooling or sedative effect, or as astringents, stimulants and antiseptics.

Salves or ointments are more largely used as local remedies in diseases of the skin than any other form of application, and are, all in all, the most useful form of local medication. They are composed of a great variety of medicinal agents incorporated with some fatty base, and according to the purpose in view they are merely protective or astringent, sedative, stimulating, parasiticide, or alterative, and the effect may be greatly varied merely by the manner in which they are employed.

If they are to be used simply as a protective, they should be bland, of rather firm consistence, and should be applied with very gentle friction, either directly to the skin, or, if the parts are sensitive, they may be spread upon lint or gauze and gently laid upon the diseased area.

If it is desired to affect the deeper portions of the skin, they should be thoroughly rubbed in, not merely smeared over the affected parts. A large number of fatty substances are employed as bases for ointments and it is by no means an unimportant matter what particular

base is employed in a given case. When penetration is desired one of the best bases is lard, but it has the disadvantage, common to many animal fats, that it readily becomes rancid and is then an irritant. Mineral fats, such as are obtained from petroleum, have the very great advantage over those of animal or vegetable origin in that they are unalterable, but most of them have a low melting point, so that they readily become soft when applied to the skin and are absorbed by clothing or bandages. Lanolin, or wool fat, adeps lanæ, a cholesterin fat largely employed in recent years, may be made to penetrate the skin quite readily, but is too viscid to be used alone. When combined with some soft fat, such as lard, or with an oil, such as oil of sweet almond, or lard oil, it forms an excellent ointment base when it is desired to produce a deep effect. As a rule the best ointment bases are obtained by combining two or more fats.

Quite recently an admirable ointment-base, known as *eucerin*, has been introduced by Unna. It is a derivative of wool fat, adeps lanæ, but lacks the objectionable viscid quality of that fat. It is entirely odorless and may be made to penetrate the skin very readily. The author has used it extensively in the past two or three years and finds it especially adapted for use upon the scalp; indeed, it is one of the very best bases for ointments to be used in this region.

The following may be mentioned as examples of soothing and protective ointments to be employed alone or as vehicles for more active remedies: Unguentum Aqua Rosæ, which is one of the most elegant and agreeable of all; Unguentum Zinci oxidi, diachylon ointment, or a substitute composed of equal parts of lead plaster and cosmoline. The zinc ointment of the Pharmacopœia may be advantageously replaced by one containing two drachms (8.0) of oxide of zinc to six drachms (24.0) of the Unguentum Aqua Rosæ, being far more soothing than the official ointment.

A very valuable modification of the ointment is the pastes which are much more adhesive, form a better protective covering than the former, and act to a limited extent as absorbents. They contain considerable quantities of stearate or oxide of zinc, subcarbonate or subnitrate of bismuth, or talc combined with starch, gum, or dextrin, and some fatty base. To these, various active medicinal substances, such as salicylic and boric acids, tar, resorcin, ichthyol, and many others, may be added as indicated. They should not be applied to parts covered by hair unless first shaved and should be removed once a day by the application of some fatty substance, such as vaseline, olive oil or oil of sweet almond; soap and water only make them more adhesive. One of the most frequently employed is one devised by Lassar and known by his name; the formula is as follows:

℞. Acid. salicylic ..... gr. x (0.65)
Pulv. amyli,
Pulv. zinci oxidi ..... aa ʒii (8.0)
Petrolat. ..... ʒss (16.0)
M.

Pastes, as a rule, are not suitable when there is free oozing. It is difficult to apply them to moist surfaces and they do not adhere.

Glycerin is a valuable addition to washes and salves when sufficiently diluted, making them much less drying; undiluted, it is quite irritating to the skin. When combined with a considerable proportion of gelatin it forms the so-called glycogelatins which, solid when cold, become quite fluid when warmed, so that they may be readily applied to the skin with a flat brush. When it is desired to give them consistency, powders, like oxide of zinc, in varying proportions are added. These are a useful form of application when it is desired to employ a dressing which affords the utmost protection to the diseased surface, and which may be left undisturbed for a considerable period. They may have a variety of drugs, such as sulphur, ichthyol, calomel, ammoniated mercury or chrysarobin, added to them, according to the indications of the individual case. When it is desired to remove them this may be readily done by the use of hot water.

Varnishes are of two kinds—those soluble in water, which are composed of gum, such as tragacanth or gum arabic, or bassorin, with glycerin and water, and those, like collodion and solutions of gutta-percha, which are insoluble in water. These, like the glycogelatins, may be medicated in a variety of ways.

Plasters are employed to a limited extent when it is desired to avoid the use of greasy applications or to produce a more continuous impression upon the affected parts as well as to protect them. While they are convenient and cleanly, they labor under the disadvantage common to all fixed dressings—that they cannot be altered in composition and proportion to suit the individual case. Useful forms of plaster are the salve muslins, mulls, and plaster mulls introduced into dermatological therapeutics by Unna. These are cleanly and effective, but are open to the same objection that other forms of plaster are. They are medicated with salicylic acid, tar, salts of mercury, oxide of zinc and a great variety of other medicaments in varying strengths.

Soaps are useful in the treatment of diseases of the skin as detersives or as vehicles for various medicinal agents. As a detersive and stimulant in various diseases of the skin, sapo viridis, soft soap, which contains a large amount of potash, is frequently useful, but owing to the large amount of free alkali in its composition it must be used with caution, otherwise it produces a considerable degree of irritation, removing the protective horny layer of the epidermis. In recent years it has been endeavored to lessen the irritating effects of soap by adding an excess of fat, producing so-called "superfatted" soaps. These are medicated with salicylic acid, tar, resorcin, ichthyol, thymol, sulphur, phenol and various mercurial salts. While soaps are convenient, they can by no means replace ointments. They are of use chiefly in parasitic diseases, such as scabies, and in diseases of the scalp.

The following is a brief list of some of the more important remedies

employed in the treatment of diseases of the skin arranged according to their therapeutic effect:

Protectives.—Simple ointments composed of bland fats (lard, lanolin, petrolatum) and oils (olive oil, oil of sweet almond, oil of sesami); dusting powders; plasters.

Astringents.—Acetate of lead; acetate and chloride of aluminum; tannic acid; sulphate of zinc.

Sedatives and Antipruritics.—Carbolic acid; menthol; resorcin; coal-tar; hydrocyanic acid (dilute); weak alkaline solutions; dilute acetic acid.

Keratoplastic Agents (those which favor keratinization and healing of the epidermis).—Salicylic acid (when used weak); resorcin (in moderate strengths); sulphur; tar; tumenol; formaldehyde; chrysarobin; salts of mercury.

Keratolytic Agents (those which soften the horny cells of the epidermis and cause its exfoliation).—Salicylic acid (one of the most important); resorcin (when used in considerable strength); acetic acid.

Antiseptics and Parasiticides.—Carbolic acid; salicylic acid; resorcin; salts of mercury, both the soluble and insoluble; sulphur; tar; formaldehyde; naphthol.

Caustics.—Caustic potash; caustic soda; chloride of zinc; pyrogallol (especially useful in the treatment of flat superficial epithelioma); arsenious acid (very effective in malignant growths, but extremely painful); acetic and trichloracetic acids (superficially acting); nitrate of silver; chromic acid; solid carbon dioxide (carbon dioxide "snow," very useful when a superficial effect is desired with but little scarring); liquid air.

The various forms of radiant energy, such as concentrated light, the X-ray, and the emanations from radium, form a most useful group of remedial agents in the treatment of many diseases of the skin. They are especially valuable in the treatment of new growths, both benign and malignant, and of the infectious granulomata, such as tuberculosis. The X-ray is likewise frequently of great service in chronic eczema, with much thickening, in acne, sycosis, and in the treatment of ringworm of the scalp. Of these, the X-ray is probably the most useful to the dermatologist, but it is a remedy potent both for good and evil and should accordingly be used with care and discrimination with a full appreciation of its powers; otherwise much harm may result from its use. Electrolysis, the high-frequency current, and the violet ray also find a limited use in the treatment of diseases of the skin.

CHAPTER VII

CONGESTIONS—HYPERÆMIÆ

ERYTHEMA SIMPLEX

By erythema is meant simply redness of the skin, the result of congestion or over-fulness of the blood-vessels. This redness may affect an entire region, may be limited to variously-sized, ill-defined, or well-circumscribed patches, or may occur as small spots or macules, varying in size from that of a hemp-seed to a pea, when it is often designated roseola. In simple hyperæmia the redness can be made to disappear completely under pressure, but immediately returns when the pressure is removed. The skin may be unduly warm to the touch and the patient may experience more or less heat or itching, or subjective symptoms may be entirely wanting. The entire group of hyperæmic erythemata are essentially mild inflammations of the skin and might with entire propriety and accuracy be described under the title dermatitis.

Two classes of erythemata are recognized—the idiopathic, or those in which the skin affection exists independently of any other, and the symptomatic, in which the eruption is but a part of a general affection or the result of disturbance in some other organ.

The idiopathic erythemata are for the most part the result of local conditions, such as heat, cold, traumatism, or contact of the skin with irritants such as various poisonous plants or chemical substances.

The symptomatic erythemata are, for the most part, toxic manifestations and are usually part of a general infection, such as the roseola of typhoid and of syphilis, the erythematous eruptions which sometimes accompany or precede cholera, variola, and other general infections. Or the toxic substance may be absorbed from the gastro-intestinal canal, as in the erythemata which accompany gastric disturbances in young children.

There are a number of clinical varieties of idiopathic erythema which are classified chiefly according to their causes.

Erythema Caloricum.—Under this term are included those forms of erythema due to exposure of the skin to heat. A common form of this variety of erythema is sunburn, erythema solare, although to be quite accurate this is due to the combined effect of heat and the chemical rays of light. With the disappearance of the redness more or less pigmentation, so-called tanning, remains.

Erythema ab Igne.—Prolonged exposure to artificial heat, as of the fire, will produce a retiform erythema which in time is followed by pigmentation presenting a similar net-like arrangement. This variety of erythema is seen most frequently upon the lower extremities of those who are in the habit of toasting their shins before an open fire or by

sitting close to the stove. It may also follow the prolonged application of the hot-water bag, one of the most marked examples of the affection which the author has ever seen having been produced in this manner in the sacral region. The pigmentation, which follows the erythema, is frequently mistaken for a syphilitic symptom.

Erythema Traumaticum.—Mild injuries of the skin, such as follow pressure or friction, may produce an erythema.

Erythema Venenatum.—Exposure to contact with poisonous plants and many chemical substances, such as dye-stuffs, or medicinal substances used as local remedies, may produce an erythema which, unless the exposure is short, usually passes into a dermatitis.

Erythema Pernio.—Exposure to cold in the young and old with feeble circulation produces an erythema situated upon the extremities, especially upon the toes, heels, and outer sides of the sole, less frequently upon the nose and ears. The affected regions are usually a dusky red or bluish red, and itch and burn to a marked degree, especially when the parts become warm. The affection usually disappears in warm weather more or less completely, to recur with the return of cold weather year after year. Exceptionally, inflammation, vesiculation, and even ulceration, may occur as the result of neglect, or from rubbing of the shoe. Those who suffer from this form of erythema usually have a sluggish peripheral circulation, as shown by dusky extremities which may become quite livid when cold.

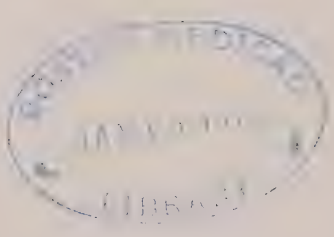
In the treatment of pernio effort should be made to improve the circulation in the affected parts by the application of stimulating lotions and liniments, such as soap liniment; by alternate immersion in hot and cold water, and protection by warm clothing. Duhring found a lotion containing five grains (0.32) each of sulphate of zinc and sulphuret of potash to the ounce (32) of water a useful application. Tinctura iodi, painted on lightly once a day, is useful; or 25–50 per cent. ichthyol solution may be applied in the same manner. When the parts are lightly frosted, Lapatin has advised the application, once a day, for three or four successive days, of equal parts of dilute nitric acid and peppermint water. If the parts are severely frozen, they should be kept away from the fire, and efforts to restore the circulation be made by friction with snow, when this is obtainable.

Erythema intertrigo, or simply intertrigo, chafing, occurs upon opposed skin surfaces and is the combined effect of heat, moisture, and friction. It occurs in the axillæ, the groins, between the buttocks, on the inner surfaces of the thighs, and beneath the breasts in women; in fat subjects, especially in infants, it occurs likewise in the flexures of the joints. The skin is bright red at first, and later becomes moist with maceration of the corneous layer of the epidermis. There is a variable amount of tenderness with heat. If neglected, or if injudiciously treated, a true eczema is likely to follow. It is usually much worse in warm weather, when it may be the source of much annoyance to stout subjects.

The disease is produced by purely local conditions, and is the result of heat, moisture, and friction combined. It may result from neglect in infants, especially in the region of the buttocks and groins; or, on the other hand, from too frequent bathing.

It is to be distinguished from eczema by its limitation to those regions in which opposed surfaces of the skin are in contact, and by the absence of itching and infiltration of the skin. In infants it is to be differentiated from syphilitic erythema, which is likely to occur in this region, by the usually darker hue of the redness, its limitation to the buttocks, and the absence of syphilitic lesions elsewhere.

In the treatment of intertrigo the parts should be mopped frequently with a saturated solution of boric acid, and afterwards freely powdered with a dusting powder composed of equal parts of talc, oxide of zinc, and boric acid. Or, in regions where there is an abundance of perspiration, a powder containing one per cent. of salicylic acid will be found serviceable. The opposed surfaces should be kept apart by lint or gauze, or, as suggested by Unna, by thin bags made of cheese-cloth or other loose-meshed cloth filled with a dusting powder such as has been given above. Occasional applications of weak astringent lotions containing acetate of lead, sulphate of zinc, or aluminum acetate are at times useful. In infants particular care should be taken to remove soiled napkins at once, and to keep the parts thoroughly dry by the liberal application of a dusting powder. As a rule, salves should not be used, although an exception may be made in favor of the so-called pastes which contain a large quantity of powder.



CHAPTER VIII

INFLAMMATIONS—EXUDATIONES

ERYTHEMA MULTIFORME

Synonyms.—Erythema exsudativum multiforme (Hebra); Fr., Érythème multiforme.

Definition.—An acute inflammatory disease of the skin distinguished by an eruption composed of a variety of lesions, such as macules, papules, nodules, and, less frequently, vesicles and bullæ, in varying combination and arrangement.

Symptoms.—The attack usually begins abruptly without premonitory symptoms, although in a small number of cases there are headache, malaise, and slight fever for some hours before the appearance of the eruption; and in rare instances there is considerable elevation of temperature, amounting to 102°–103° F., with muscular and joint pains and swelling of the joints, the eruption appearing only after twenty-four to thirty-six hours. As its name indicates, the eruption presents considerable variety in the type of lesions and their arrangement.

In the commonest form of the disease the eruption consists of a variable number of, at first bright red, later violaceous, macules and flat papules, the latter frequently exhibiting a small central punctum which later may become a decided depression, occasionally transforming the larger papules into ring-shaped lesions. The eruption shows a decided predilection for certain localities, such as the backs of the hands (the most frequent site), the extensor surface of the forearms, the sides of the neck over the sterno-mastoid muscles, about the elbows and knees, and the tops of the feet. Much less frequently the eruption occurs upon the trunk, where it is most apt to be of the macular type (Fig. 7).

The macules occasionally undergo involution in the centre, while they continue to spread peripherally, forming well-defined rings, erythema annulare. New macules may appear in the centre of these rings, which undergo the same development, and in this manner several concentric rings arise of different colors, the new ones bright red, the older ones bluish or greenish, erythema iris (Fig. 8); or several spreading rings may join to form gyrate figures, erythema gyratum. The eruption may consist of a variable number of variously sized, round, or irregularly shaped patches with somewhat elevated borders, erythema marginatum. All these varieties of macular eruption are seen most frequently upon the trunk.

Somewhat exceptionally, the inflammatory process may go on to the production of sufficient exudation to form vesicles, or blebs, erythema vesiculosum, erythema bullosum, situated, in most cases, upon the hands and forearms, a variety occurring comparatively fre-

quently in newly arrived immigrants. The vesicles may be arranged about the borders of erythematous patches forming rings, herpes circinatus; or there may be several concentric rings of vesicles, herpes iris. Subjective symptoms are often entirely absent, but itching, varying from slight to severe, is present in a certain number of cases.

In rare cases the mucous membrane of the lips and of the cheeks may also be attacked.

The number of the lesions and the extent of the eruption vary considerably. In the maculopapular form the number of macules and papules is usually quite limited. There may be no more than a dozen of papules on the backs of the hands, with a few on the sides of the neck; but occasionally there may be scores of them covering

FIG. 7.—Erythema multiforme, papular variety.

the hands and the forearms, the sides of the neck, the forehead, and cheeks. In the various macular forms, occurring for the most part on the trunk, the greater part of this region may be covered, although here, too, the patches may be quite limited in number.

In rare cases the eruption, instead of being on both sides of the body, may be confined to a limited area on one side. In a case under the author's observation in the University Hospital it was limited to the inguinal region of the left side, the lesions being of the maculopapular type and typical in every respect. There were frequent recurrences, three or four each year, for several years.

In mild cases of the papular type new lesions usually continue to appear for two or three days, and the attack ends in a week. In the

severe forms there may be a number of crops coming out irregularly, prolonging the disease to two or three weeks. In rare instances the affection may last for months, or even several years, erythema perstans (Kaposi, Stelwagon).

In a certain small proportion of cases the eruption is accompanied by pronounced constitutional disturbance, sometimes of a serious character, with visceral symptoms. Osler has reported a considerable series of cases in which, along with a characteristic eruption, there were nausea, vomiting, gastro-intestinal pains, and diarrhœa, with occasional bloody stools.

Recurrences are very common in all varieties of the malady, especially so in the papular form, and not very infrequently there are

Fig. 8.—Erythema multiforme (erythema iris).

several attacks a year. In a young woman, under the author's care some years ago, there had been an attack every year in the spring for sixteen years.

Etiology.—Age and season are common predisposing causes. It is quite infrequent in childhood and old age, but occurs most frequently in youth and young adults. It is much more common in the spring and autumn than at other seasons, although it may occur at any time of the year. Sex is without any appreciable influence upon its occurrence.

The association of the eruption with painful and occasionally swollen joints in a certain proportion of the cases inclines many authorities to regard the affection as of rheumatic origin; but it need hardly be pointed out that there are many kinds of arthritis which have nothing to do with rheumatism. There is no satisfactory proof, in the author's

opinion, of its rheumatic origin. A perfectly typical erythema multiforme is occasionally produced by certain drugs and sera, such as antipyrin, the salicylates, the iodides, copaiba, and antitoxin. The author has seen a most characteristic eruption follow the ingestion of copaiba. It is occasionally observed in septic conditions, and is then apt to be quite extensive in its distribution.

Crocker observed the papular variety to follow irritation of the extremities from exposure to cold, to the sun, and to sea-winds; but these could hardly have been anything more than predisposing factors.

Pathology.—The preponderance of evidence is greatly in favor of the view that erythema multiforme is of toxic character; and it is altogether probable that diverse toxins are concerned in its production, a view to which its occurrence after drugs and sera lends much support. Its occasional association with septic conditions seems to make it likely that it may also at times be the result of infection.

Erythema multiforme, urticaria, and purpura are apparently closely related affections, and at times seem to alternate with one another in the same subject. It therefore seems quite probable that they are due to similar or perhaps identical causes, and that the mechanism of their production is much the same.

The histological features are those of a dermatitis. The papillæ of the corium are œdematous and wider than normal, and their vessels are dilated and surrounded by a more or less pronounced exudate of lymphocytes, polynuclear leucocytes, and not infrequently a few red cells which give to the papules their characteristic crimson or bluish color. In the epidermis, in which the changes are of a secondary character, the cells of the rete are somewhat swollen, and the intercellular spaces are enlarged and contain a small number of leucocytes. In the vesicular and bullous forms all these alterations are much more pronounced. The rete contains intercellular cavities filled with serum and leucocytes, and in the bullous form the horny layer, or the entire epidermis, is lifted up from its attachment to the papillary body by an abundant exudation of serum. The contents of the vesicles and blebs are usually sterile, but sometimes contain staphylococci.

Diagnosis.—The multiform character of the eruption; the bright red color which shortly becomes bluish; the frequent presence of a central point or depression in many of the papules; the pronounced preference for the backs of the hands; the absence or trivial character of the subjective symptoms, in most cases; and the decided tendency to recurrences, are the characteristic features which distinguish it from other eruptions.

It is most likely to be mistaken for urticaria, especially if itching is present; but the bright red or violaceous color of the papules, the presence of a central depression in many of them, and more particularly their persistence, in marked contrast to the evanescence of the urticarial wheal, serve to distinguish it from that affection.

The frequently multiform character of the eruption and the large

size and color of the papules, the absence of marked itching, and its characteristic localization upon the backs of the hands sufficiently distinguish it from papular eczema.

The bullous form is to be distinguished from pemphigus and the bullous variety of dermatitis herpetiformis. Both the latter are chronic diseases, and dermatitis herpetiformis is attended, as a rule, by violent itching. Erythema multiforme is practically always an acute affection, and seldom itches to any extent. It must be admitted, however, that in its beginning stage dermatitis herpetiformis may resemble bullous erythema multiforme sufficiently to make a positive differential diagnosis between the two possible only after a period of observation.

A certain degree of resemblance may at times exist between erythema multiforme and erythema nodosum, but the lesions of the latter are decidedly larger than those of the former, are situated, in most cases, over the front of the leg, and are often very sensitive or painful.

Prognosis and Treatment.—With the exception of the cases accompanied by visceral symptoms and those of septic origin, the prognosis is always favorable. In the cases with visceral complications, and in those of septic origin, grave symptoms may arise, followed at times by a fatal issue. As already observed, recurrences are common, and the disease may appear year after year, sometimes several times a year.

The disease is probably but little influenced by any form of treatment. In cases of average severity the administration of a saline laxative and the application of a lotion of phenol, one per cent., or of menthol, five per cent., in thirty per cent. alcohol, if itching is present, will usually be sufficient. When muscular and arthritic pains are associated with the eruption, salicylate of soda, aspirin, or salicin may be given with advantage in moderate doses. In those with visceral complications or of septic origin, salicylate of quinine should be given in considerable doses. Villemin regarded iodide of potassium as a specific, but it is more than doubtful whether it exercises any appreciable effect. For the prevention of recurrences the salicylate of soda, salol, or salicylate of quinine in moderate doses may be given intermittently for some time; but it must be confessed that these frequently fail to prevent them.

ERYTHEMA NODOSUM

Synonyms.—Dermatitis contusiformis; erythema contusiforme; Fr., Érythème noueux; Ger., Knotenerythem.

Definition.—An acute inflammatory disease characterized by painful nodes situated, in most instances, upon the legs over the tibia.

Symptoms.—It usually begins abruptly with some constitutional disturbance—headache, muscular and joint pains, the latter at times

quite pronounced, and fever. After some hours, or, less frequently, after a day or two, bright red, ill-defined, round or oval spots appear upon the legs, usually over the tibia, which are quite sensitive, and upon palpation are found to be deep-seated nodes. These, after a day or two, as they approach the surface, present some elevation and increase in size until they become as large as a small nut, or, exceptionally, as large as a pigeon's egg. Bright red at first, within two or three days they become bluish, later greenish, and finally brownish, presenting the changes in color shown by an ordinary bruise, hence one of its names, dermatitis contusiformis. At first they are quite firm, but later, when fully developed, they are somewhat soft and elastic, and upon palpation frequently give a sensation of fluctuation like an abscess, which they may resemble somewhat; but suppuration rarely occurs, although it has been noted by a few observers. The number on each leg varies from two or three to a dozen or twenty; but as a rule they are present in moderate numbers. Occasionally they occur upon the forearms, usually upon the outer side; and, quite exceptionally, they are seen upon the face. In rare instances they have been seen upon the mucous membranes of the mouth and pharynx, and Cott has reported a case in which they were present upon the tracheal mucosa, giving rise to alarming dyspnœa. In exceptional cases the constitutional disturbance is pronounced, the temperature reaching 104° or 105° F.; and hemorrhage may occur in the nodes, giving them a crimson or purplish color, which does not disappear under pressure.

Occasionally mixed cases occur, in which, along with the usual nodes upon the legs, there is a papular eruption on the backs of the hands characteristic of erythema multiforme. Such cases go far to support the contention of those who regard the malady as a variety of the latter.

The duration of an attack varies from ten days to two or three weeks, but it is not very rare to see it last five or six weeks, new nodes appearing every few days. Second attacks are quite unusual, although not exactly rare.

Etiology.—Erythema nodosum occurs most frequently in the second and third decades, and is decidedly uncommon at both extremes of life. Women are much more frequently its subjects than men, according to Mackenzie, in the proportion of five to one. In a series of 108 cases this same author found the disease so frequently associated with arthritis, sore throat, endocarditis, and other symptoms commonly attributed to rheumatism that he concluded that it was, in most cases, if not invariably, a rheumatic affection; but it is hardly necessary to point out that rheumatism is a very elastic term applied to a number of affections which are quite unrelated so far as their causation is concerned. Other factors which are regarded as directly causative or predisposing are malaria, exposure to cold, and damp and unhygienic surroundings. In a considerable number of instances, much too

large to be the result of mere coincidence, it has been observed in connection with tuberculosis, and in a small number in the secondary stage of syphilis.

Very recently Rosenow has found in the nodes a polymorphous diplococcus, usually in pure culture, which, when injected into the dog, the rabbit, and guinea-pig, exhibits a marked affinity for the subcutaneous tissues, where it produces localized hemorrhages, followed by migration of leucocytes and enlargement of the regional lymph-glands. He regards this organism as the cause of the affection.

Pathology.—Erythema nodosum is regarded by many authorities as simply a variant of erythema multiforme, and there is apparently very little doubt that the two are closely related. The occurrence of mixed cases in which symptoms of both are present simultaneously affords strong proof in support of this view. It is regarded by most recent authors as an infection, and the findings of Rosenow, above referred to, seem to confirm this, although these still await the confirmation of other investigators. It seems not at all improbable, however, that a similar, if not identical, eruption may be produced by more than one kind of infection. There is strong evidence that it is in some manner related to tuberculosis and occasionally, perhaps, to syphilis.

The histological changes are those of inflammation, and are much the same as those found in erythema multiforme. The changes in the epidermis are slight—some swelling of the cells, with dilatation of the lymph spaces, and an increased number of mitoses. In the papillary body and in the corium the vessels are dilated and surrounded by an abundant exudation of leucocytes. According to most authorities, there is more or less diapedesis of red blood-cells, which accounts for the changes in color which the nodes exhibit; but Unna has never found extravasated blood. He attributes the discoloration to the breaking up of hæmoglobin in the vessels and its absorption by the tissues.

Diagnosis.—The lesions of erythema nodosum are to be distinguished from bruises, from abscess, and from syphilitic gumma.

Their number and symmetrical distribution, with the constitutional symptoms which are usually present in some degree in the beginning, differentiate them from the first. The local symptoms are usually much more pronounced in abscess, and this is rarely present in such numbers as the nodes. The multiplicity of the lesions, their tenderness, and rapid change in color distinguish them from syphilitic gummata.

Prognosis and Treatment.—The prognosis is always favorable, the affection running a course of two or three weeks in most cases, although it may be prolonged to five or six. In rare cases, as already noted, the constitutional symptoms may be quite severe.

The treatment is altogether symptomatic. We know of no remedies which directly influence the course of the disease. In all but the

mildest cases, the patient should be put to bed, and if the pain in the nodes is at all severe the legs should be elevated. A mild laxative should be given and the diet somewhat restricted. Salicylate of soda, aspirin, or salicin should be given in moderate doses. Locally, lead-water and laudanum should be applied on gauze, or a mixture of ichthyol in water, one part of the former to three of the latter, may be applied with a camel's-hair brush twice or three times a day.

URTICARIA

Synonyms.—Hives, Nettlerash; Fr., Urticaire; Ger., Nesselausschlag, Nesselsucht.

Definition.—An inflammatory disease of the skin distinguished by an eruption of whitish, pink, or red elevations known as wheals, which are usually quite evanescent, and are accompanied by severe itching and burning.

Symptoms.—The attack usually begins quite suddenly with the appearance of a variable number of wheals, and in a certain proportion of cases with some gastric disturbance, such as nausea, vomiting, and, exceptionally, with some elevation of temperature. In a considerable number of cases, however, the eruption is the only symptom. The wheals vary in size from that of a small pea to the palm of the hand, are round or irregular in shape, sometimes serpiginous, and quite often linear, the last looking as if produced by the stroke of a whip-lash. The number of the lesions and extent of the eruption vary greatly. There may be less than a half-dozen wheals limited to a certain locality or scattered about in various regions, or there may be hundreds of them covering a considerable part of every region of the body. One of their most striking and characteristic features is their evanescence. They usually last but a short time, from a few minutes to an hour or two, and then disappear, leaving no trace of their existence. They may appear with extreme rapidity, covering the greater part of the skin within a few minutes.

The eruption is by no means limited to the skin, but attacks the mucous membranes of the lips, the tongue, the larynx, and even the bronchi. The lips when attacked are often greatly swollen, and the tongue may be so swollen as to protrude from the mouth. When the larynx is invaded there is more or less dyspnœa, and with the involvement of the bronchi the breathing becomes markedly asthmatic.

In exceptional cases a small vesicle may appear upon the top of the wheal; or, still less frequently, the exudation may be so great as to produce blebs or bullæ (urticaria vesiculosa, urticaria bullosa). In rare instances the wheals are purplish, owing to hemorrhage into them (urticaria hemorrhagica, purpura urticans).

More or less itching, burning, and tingling accompany the eruption, and are frequently of the most distressing character, driving the patient to desperation in his efforts to obtain relief. In women and children a highly nervous condition may result.

In many cases wheals may be artificially produced by stroking the skin with some blunt object, such as the end of a pencil, or with the nail. Such stroking produces at first a red streak with a white centre, which, within some minutes, becomes a well-developed linear wheal, which may last from twenty minutes to a half hour. This condition, known as urticaria factitia, or *dermographism*, *autographism* (Fig. 9), also occurs in other itching affections, such as pediculosis corporis, scabies, and eczema. As it is often discovered by accident,

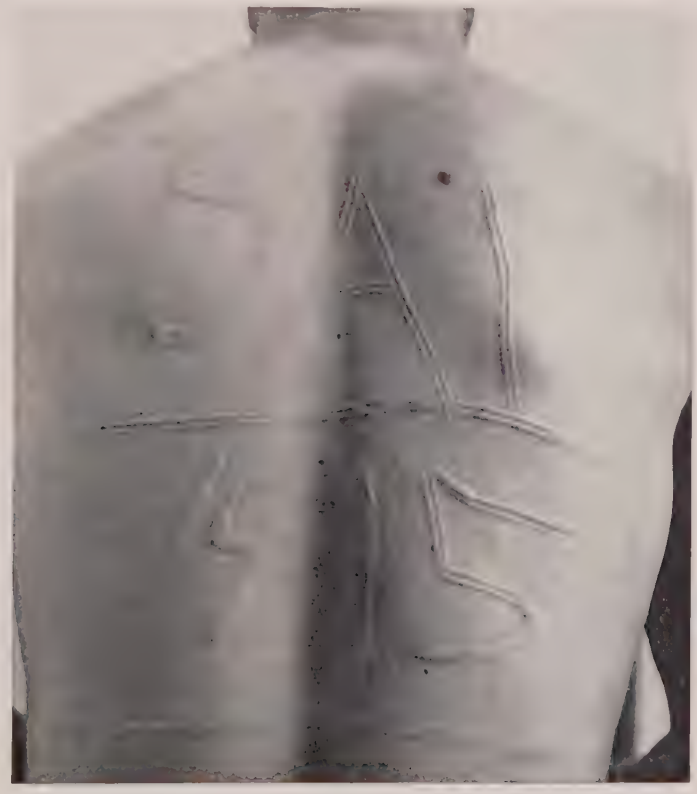


FIG. 9.—Dermographism. Letters and figures appeared about fifteen minutes after rubbing with the end of the handle of a pen-knife and lasted about a half-hour. Patient had an eczema of the face and neck.

the susceptibility is no doubt present in many cases of these diseases without being discovered.

Although the wheals usually last but a short time, a few hours at most, cases occur in which they last for some days, or even a month or more (urticaria perstans).

In much the larger proportion of cases, urticaria is an acute affection, lasting a few days or a week; but it also occurs as a chronic malady, lasting months or years. As in the acute variety, the individual wheals are of short duration, but new ones are constantly taking

the place of the old ones, and the affection is thus greatly prolonged. The patient is rarely quite free from eruption, there being a few wheals present in one locality or another continuously, and acute exacerbations occur from time to time, in which the number of lesions is greatly increased, with a corresponding increase in the itching and burning. These exacerbations may, in exceptional cases, exhibit a remarkable periodicity. In a case under the author's care for a considerable time, a furious outbreak occurred every afternoon about five o'clock for more than five years.

In children, especially in those ill-nourished and badly cared for, an affection known as papular urticaria (urticaria papulosa), also as lichen urticatus, occurs which differs from other forms of urticaria. The eruption begins as hemp-seed sized, firm, pink or red wheal-like papules, which, however, do not disappear in a short time like the ordinary wheals, but persist as papules for days, or longer. These papules itch severely, and as the consequence of scratching most of them are covered with a small blood-crust. The eruption is most abundant upon the extremities, although by no means limited to these, and disappears largely in cold weather, to reappear with the return of warm weather. With some other writers, the author is inclined to regard this as related to mild prurigo rather than to urticaria.

Etiology.—The sting of plants, such as the nettle; the bites and stings of certain insects, such as the mosquito, the flea, the bedbug; and contact with certain hairy caterpillars and the jelly-fish, are frequently enumerated as among external causes of urticaria; but, while it is true that these produce wheals, they do not cause urticaria—the presence of a few wheals from such causes does not constitute an attack of urticaria.

The most frequent cause of urticaria is the ingestion of certain articles of food, such as strawberries, shell-fish (such as crab, lobster, less frequently oysters, clams), veal, pork, honey, eggs, but, in addition to taking such foods, there is necessary a certain predisposition on the part of the individual, since many, in fact most, persons may partake of them without any ill-effects. Many drugs may, in predisposed subjects, produce an attack. Antipyrin, the salicylates, the iodides, quinine, and many others are occasionally followed by urticaria. It frequently follows emotional disturbance. The author has seen a most extensive eruption follow the embarrassment of an interview with a stranger, the whole body being covered with wheals within five minutes.

Malaria is likewise to be regarded as an occasional cause. The author has seen an instance in which an eruption of wheals occurred every other day, the attacks ceasing promptly with the administration of quinine, and H. C. Wood has recorded a similar case.

It occasionally precedes or accompanies other affections of the skin. Prurigo usually begins as an urticaria in infancy, and it occurs with a fair degree of frequency in certain cases of dermatitis herpetiformis.

In women functional or organic disease of the generative apparatus may produce it. In the classical case recorded by Hebra an attack invariably followed the introduction of the uterine sound, and Spencer Wells observed it in one case after every introduction of the vaginal speculum.

It has been noted to follow the puncture or rupture of a hydatid cyst, the fluid escaping into the peritoneal cavity.

Pathology.—Recent investigations make it altogether probable that urticaria is to be regarded as an anaphylactic phenomenon in most cases, if not invariably the result of a hypersensitiveness on the part of the subject to certain proteins, or to other substances, such as drugs, which may behave like proteins.

The urticarial wheal is the product of a marked circumscribed œdema. By most authorities it is regarded as a vasomotor phenomenon resulting from the irritation produced by some toxin in the circulation. Vidal, who examined sections of a wheal excised during life, found the superficial and deep network of vessels dilated and gorged with blood with no alteration of the vessel-walls. Around the vessels and lymphatics were many leucocytes, and collections of these were scattered throughout the entire thickness of the corium. There was also a slight emigration of leucocytes into lower layers of the epidermis.

Unna, in the wheals produced by the sting of the nettle, found an enormous dilatation of the lymph-spaces and vessels most pronounced in the neighborhood of the deep vascular network. The white color of the wheal was due to the venous stasis present which compressed the capillaries, driving out the blood. He found no leucocytes nor other signs of inflammation and regards the process as a very acute spastic œdema.

Gilchrist, who studied the wheals of factitious urticaria excised at varying intervals after their production, found decided evidences of inflammation—emigration of polymorphonuclear leucocytes, lymphocytes, and fragmentation of nuclei.

Diagnosis.—The urticarial wheal is such a very characteristic lesion that when present the diagnosis of urticaria may be made with the greatest ease. But it very frequently happens that one is called upon to make the diagnosis when the eruption has for the time disappeared. The evanescent character of the eruption, the severe itching and burning which accompany it, often with swelling of the lips or the lids, the white color of the wheals which the patient often describes as blisters, and their frequent linear shape, together with the knowledge that the patient has eaten strawberries or shell-fish, will usually enable the diagnosis to be made without difficulty.

Prognosis and Treatment.—The prognosis in acute urticaria is always favorable, the attack seldom lasting more than a few days and often only a few hours. It is otherwise, however, in the chronic variety. This may persist for many months or several years with in-

complete intermissions, in spite of the most careful attention to the patient's diet and mode of life, and cause him extreme distress.

In an acute attack, if the patient is seen sufficiently early, and it is probable that it is due to the taking of some article of food, such as shell-fish, the stomach should be emptied by an emetic, or if some time has already elapsed since the meal, hourly doses of a tenth of a grain (0.006) of calomel, until ten have been taken, should be given, followed by a brisk cathartic. For the relief of the itching, lotions of phenol, one to two per cent.; of menthol in alcohol, one-half to one per cent.; of thymol, one-half per cent.; of chloral hydrate, two to three per cent.; of sodium bicarbonate or sodium biborate, one to two per cent.; dilute acetic acid, two per cent., will be found more or less useful. Dusting powders composed of talcum and stearate of zinc, or subnitrate or subcarbonate of bismuth, with one-half per cent. of menthol added, will often prove useful if liberally applied. The diet should, of course, be carefully regulated to prevent relapses and new attacks.

In chronic urticaria the patient's diet should be carefully and minutely supervised and the possible hypersusceptibility to certain proteins be determined by a rigid analysis of his dietary, or by the epidermic inoculation or intradermic injection of soluble food proteins. In the author's own experience, however, food is much less frequently the etiological factor in the chronic form than in the acute variety. The bowels should be kept freely open, preferably with some saline, and occasional short courses of small doses of calomel should be given. In the gouty, alkaline waters, especially Vichy, should be freely given and a suitable regimen adopted. Patients with diabetes or uterine disease should have treatment appropriate to these affections.

Intestinal antiseptics, such as salol, guaiacol, or the salicylate of bismuth, are at times serviceable and have been highly commended by Crocker. In a number of instances the administration of thyroid gland has been followed by decided relief. In a case under the author's care at the present time, which has lasted for four or five years, this has been decidedly useful, much more so than the many other remedies tried. Acetanilid with bicarbonate of soda, in doses of four or five grains (0.26 or 0.32), or phenacetin in the same dose, will often afford considerable relief to the itching, although these have no curative effect. Calcium chloride, in doses of ten to twenty grains (0.65 to 1.30), several times a day, has been recommended by Wright, but the author has found it disappointing after a considerable experience with it.

Atropin or hyoscin hydrobromate will occasionally afford relief from the itching, but the effect of these upon the mucous membranes makes their prolonged use undesirable.

Locally, the same lotions and dusting powders may be used as in the acute form. These are much more agreeable and usually much more effective than ointments.

FIG. 10.—Urticaria pigmentosa.

URTICARIA PIGMENTOSA

Synonym.—Xanthelasmoidea (Tilbury Fox).

Definition.—A chronic affection distinguished by an eruption resembling urticarial wheals, which is more or less persistent and pigmented.

Symptoms.—The disease begins in most cases early in life, usually within the first six months, and is characterized by an eruption of papules and maculopapules, varying in size from that of a hemp-seed to a pea, at first pinkish red or yellow in color, resembling the wheals of urticaria and, like those, coming out rapidly, ordinarily in a few hours. It may appear on all parts of the skin, is usually symmetrically distributed and is most abundant first upon the trunk, next upon the extremities and last upon the palms and soles, where it is rare. Occasionally it also occurs upon the mucous membranes of the mouth and pharynx. New lesions appear from time to time, while the old ones become less prominent and more pigmented. Occasionally some of the papules exhibit a vesicle upon the summit in their early stages, but this is decidedly uncommon. More or less itching, as a rule, accompanies the eruption, but in many cases this is not a pronounced symptom and may disappear entirely in the later stages. Quite commonly factitious wheals appear, and the old lesions become distinctly red and elevated when rubbed or irritated in any manner. While, as a rule, the eruption shows no definite arrangement, it is occasionally noted to follow a linear distribution upon the sides of the thorax, in the direction of the intercostal spaces, or occurs in ill-defined patches. The lesions are often very numerous and may cover a large part of the skin (Fig. 10).

Unlike ordinary wheals, they do not disappear in a little while, but remain for weeks or months, changing in color from pink to varying shades of brown and becoming flatter, with a finely granular or wrinkled surface. They may then remain for years, with but little change in appearance. As altogether exceptional, Hallopeau has reported a case in which small white cicatrices replaced the lesions.

It usually disappears spontaneously about the time of puberty, but it may last much longer. Morrow observed an instance in which it had lasted thirty years or more.

Duhring recognized two types of the malady, one a persistent urticaria with pigmentation, the other, resembling xanthoma multiplex, in which the papules are distinctly yellow, the xanthelasmoidea of Tilbury Fox. Crocker describes three types: a nodular, or xanthelasmoidea form, a macular in which there is little more than pigmentation, and a third mixed type in which the lesions are both nodular and macular.

Etiology and Pathology.—In the great majority of cases the disease begins in infancy, usually in the third or fourth month. Crocker saw one in which it was noticed at birth. Exceptionally it begins after puberty.

Elliot has reported a case in which it appeared first at twenty-seven years of age, and the author has very recently seen one in which it began at twenty-three. It is decidedly more frequent in males than in females. Six out of eight cases observed by Crocker occurred in boys. The direct cause is altogether unknown.

The epidermis shows but little change beyond an abnormal amount of pigment in the basal-cell layer of the rete mucosum. In 1887 Unna announced that the cellular exudate present in the papillary and subpapillary portions of the corium was composed almost entirely of

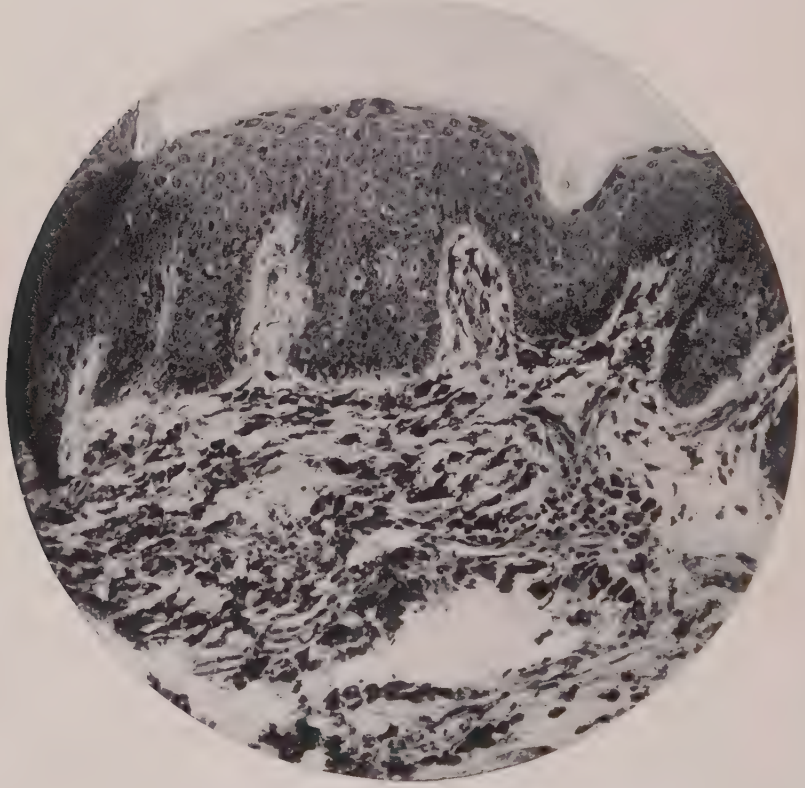


FIG. 11.—Urticaria pigmentosa. Broadening of the rete mucosum with vacuolation of some of its cells numerous "mastzellen" in corium.

"mastzellen," an observation abundantly confirmed since by other observers. These cells are arranged in rows and columns between the collagen fibres of the corium and are large and frequently cubical in shape instead of elongate, owing probably to pressure. This "mastzellen" exudate is wholly characteristic of the disease. According to Unna it is limited to the papillary body, but subsequent observations have shown that it may extend well down into the corium. According to Gilchrist the apparently sound skin contains an abnormal number (Fig. 11).

Diagnosis.—The disease is readily recognized in most cases, but the author has recently seen one case in an adult male with numerous papules the size of a shot, which resembled very closely the maculopapular syphiloderm; but a history of a duration of a year or more and a biopsy confirmed the diagnosis of pigmented urticaria. The early appearance of the eruption in infancy, the presence of wheals followed by persistent pigmentation, and its great chronicity are the characteristic features.

Prognosis and Treatment.—The affection usually lasts for many years, but, as already observed, tends to disappear about the time of puberty. In most cases the subjective symptoms are so slight as to occasion but little annoyance. Its course is altogether uninfluenced by treatment. If itching is at all pronounced, lotions of carbolic acid or of menthol may be used.

ŒDEMA ANGIONEUROTICUM

Synonyms.—Acute circumscribed œdema; Angioneurotic œdema; Giant urticaria; Quincke's disease.

Definition.—An affection distinguished by circumscribed painless swellings of the skin coming on suddenly and of short duration.

Symptoms.—This affection was first described by Milton under the name of giant urticaria, and later cases have been reported under the name of acute circumscribed or angioneurotic œdema by Quincke, Strübing, Osler, the author, and a number of others. It is characterized by the sudden appearance of ill-defined swellings on various parts of the cutaneous surface, most frequently the face, varying in size from a nut to an egg. These are usually the color of the normal skin, but may be pink or bright red, are rather firm, do not pit on pressure and, as a rule, are unaccompanied by any subjective symptoms beyond a slight feeling of stiffness or tension. In a considerable proportion of cases their appearance is accompanied by nausea, vomiting, abdominal pain or other symptoms of gastro-intestinal derangement, but these are often entirely absent. The duration of the swelling is usually short, frequently only a few hours, and, as a rule, less than twenty-four. The number present at any one time is usually quite small, as a rule not more than two or three, and not infrequently but a single one. The mucous membranes of the tongue, the soft palate, and the larynx may be attacked, and when the swelling occurs in the last situation it may give rise to the most urgent dyspnœa, and may cause death from suffocation. In a case observed by Strübing the dyspnœa became so alarming that preparations were made to do tracheotomy. In a certain number of cases the attacks recur with great regularity, coming on at a definite hour. In one observed by Matas the attacks came on every day between eleven and twelve o'clock. They frequently occur at night, the patient at retiring presenting his usual appearance, but arising in the morning with an eye completely closed or most of the features obliterated by

a formless swelling of the face. In a patient under the author's observation for some months the attacks invariably occurred at this time. Occasionally the extremities may be the seat of swellings, but the trunk is rarely affected. In a large proportion of the cases the œdema constitutes the only symptom, but occasionally ordinary wheals, such as those seen in urticaria, are present or alternate with it.

The course of the affection is an eminently chronic one, usually continuing for months and even years, the interval between the attacks varying from a few weeks to a month or more.

Etiology and Pathology.—The causes are, in a way, much the same as those of urticaria, although it is much less frequently due to ingesta than the latter. In certain individuals cold, as a cold bath, or washing with cold water, will produce it, especially in regions where there is an abundance of loose connective tissue, as the lids, the prepuce, and the scrotum. The studies of Strübing, Osler, and Schlessinger show that heredity plays an important rôle in its production, these authors having noted its occurrence in one or more members of certain families for several generations. Osler has reported the history of a family in which it was present in five generations, including twenty-two members. It is an angioneurosis closely related to urticaria and, like that affection, probably an anaphylactic manifestation.

Diagnosis.—The diagnosis is usually readily made. The sudden appearance of the swellings, usually in the face, the occasional involvement of the mucous membranes, the short duration of the lesions and the usual absence of any marked subjective symptoms, such as itching, burning, or pain, serve to distinguish it from other affections of the skin.

Prognosis and Treatment.—The course of the affection is usually a very chronic one, but little influenced by treatment. As already observed, sudden death may occur from œdema of the glottis.

The diet should be carefully supervised, excluding such articles of food as strawberries, shell-fish, cheese, and pork; in other words, the diet should be the same as in chronic urticaria, at least until it is definitely ascertained that the malady is in no way dependent upon ingesta. In the author's own experience the daily use of a mild saline laxative and small doses of sodium salicylate have given the best results.

Calcium chloride or lactate may be tried, in doses of 10 to 15 grains (0.65 to 1.0), three or four times a day. Osler has observed great improvement follow the prolonged use of nitroglycerin.

DERMATITIS EXFOLIATIVA

Synonyms.—Pityriasis rubra (Hebra); Fr., Dermatite exfoliatrice; Erythrodermie exfoliante (Besnier).

Definition.—An acute or chronic, in most cases the latter, inflammatory disease, distinguished by intense redness and abundant desquamation affecting the greater part or the whole of the skin.

Under the term dermatitis exfoliativa a number of inflammatory affections of the skin are included which have in common the symptoms

of redness, abundant exfoliation of the epidermis and universal distribution. While the different members of this group resemble one another quite closely in their clinical symptoms, they differ considerably in their course and termination, and are probably, for the most part, wholly unrelated etiologically. Certain of them are primary diseases, others are secondary to other inflammatory affections, such as eczema, dermatitis, or psoriasis, of which they may be the terminal stage or the sequel. The exact relationship of these to one another is still undetermined. Crocker was of the opinion that all were only varieties of one disease, while others regard the pityriasis rubra of Hebra as an independent affection quite distinct and apart from the rest (Jadassohn).

There are two principal types of the affection, viz., the Wilson-Brocq type, which may be acute or chronic, primary or secondary, and the Hebra type, pityriasis rubra. Other forms are the dermatitis exfoliativa neonatorum described by Ritter, and the epidemic dermatitis described some years ago by Savill. Recurrent scarlatiniform erythema is regarded by Brocq and other French authors as belonging in the same category, but will not be considered here. (*Vid.* Erythema scarlatiniforme.)

Symptoms.—The primary form of the Wilson-Brocq variety begins with redness of the skin, either diffuse or in patches, which steadily spreads until, within two or three days, or it may be two or three weeks, the greater part or the whole of the cutaneous surface is covered. In a considerable proportion of the cases there is some constitutional disturbance—headache, malaise, and fever, the last sometimes considerable—which usually disappear within a day or two, but may continue for a considerable time, as a daily evening rise of temperature. Shortly after the appearance of the redness, or almost immediately, scaling begins on the reddened areas, which are soon covered with abundant thin papery scales of considerable size. Upon the palms and soles the scales are thick and large, or the horny layer of the epidermis may come off almost entire. The scalp is covered with scales and the hair is dry. When the disease is fully developed the skin is intensely red and dry and covered with thin scales, like tissue-paper, which are constantly cast off in great abundance, and as constantly renewed. Several handfuls of scales may be gathered in the patient's bed every day, and the carpet around him is covered with them every time he removes his clothing. The hair becomes thin and the nails are lustreless, ridged transversely, and sometimes shed. When the disease has lasted for some time, the skin may lose its bright red color and become a slate-blue or quite brown, owing to pigmentation (Fig. 12).

When it occurs as the terminal stage or the sequel of eczema or psoriasis, the primary affection, retaining for a time its usual characters, spreads, either as the result of an acute exacerbation, or slowly without any special increase in the severity of the symptoms, until the entire surface is involved. It then assumes the features of a universal der-

FIG. 12.—Dermatitis exfoliativa.

matitis with abundant scaling and loses altogether its original characteristics. In the cases which follow eczema there may be some thickening of the skin and slight moisture in places at times.

While in most cases the eruption is universal, leaving no part of the skin unaffected, it may very exceptionally remain limited to certain regions, as the extremities (Crocker, Stelwagon).

Itching is present in the majority of cases and varies from mild to severe; the patient is very sensitive to cold and usually complains much of chilliness.

In severe cases of long standing the mucous membranes of the mouth and the conjunctiva may be inflamed. Swelling of the lymphatic glands is occasionally present.

The duration of the malady varies from five or six weeks to many months or years. In the latter case there may be occasional remissions or complete intermission for a variable period. Relapses are not uncommon.

The general health may remain quite unaffected, although in long-standing cases the general nutrition fails eventually and the patient may fall an easy victim to some intercurrent disease. Secondary infections, such as furuncles and abscesses, are not infrequent complications.

According to Crocker, it runs a much more acute course in children, in whom it is rare, than in adults, is accompanied by severe constitutional symptoms and may terminate fatally.

In *pityriasis rubra,* a very rare malady, the skin is bright red and covered with thin papery scales which are usually smaller than those present in other forms of exfoliating dermatitis. Its earliest stage rarely comes under observation, but in two cases which Kaposi saw it began with redness in the axillæ, groins, and popliteal spaces, which gradually spread to the rest of the skin. In the course of some months the redness and scaliness have invaded the entire surface. At first the patient's general condition is but little affected, and the skin retains its flexibility and elasticity, but in the course of years it shows thickenings in places and later becomes darker, begins to atrophy and shrink; the mouth can no longer be opened widely, ectropion of the lower lids occurs, the fingers are in a condition of partial flexion, and over the larger joints and bony prominences it is red, tense and shining and ulceration from pressure occasionally takes place. The hair and nails are also affected; the scalp is dry and covered with fine bran-like scales and the hair is dry, lustreless, and scanty, while the nails are yellow, brittle and ridged transversely.

The general condition is for a time but little altered, but eventually the patient becomes marasmic and dies of exhaustion, or from some intercurrent affection.

Etiology.—Males are much more frequently affected than females, and it occurs most frequently between the ages of forty and sixty, although it is seen in a considerable proportion of cases earlier. It is rare in childhood. In primary cases of the Wilson-Brocq type the

direct cause is altogether unknown. It has been observed comparatively frequently in association with gout, rheumatism and chronic alcoholism, but there is no reliable evidence that these are anything more than possible predisposing factors. In the secondary forms, eczema, psoriasis and, in rare instances, lichen planus directly precede it, and it has been observed after the dermatitis produced by irritating ointments, such as mercurial ointment and chrysarobin or arnica.

As has been shown by Jadassohn, Mueller and Kánitz, tuberculosis is present in a considerable proportion of cases of the Hebra type, pityriasis rubra. Brusgaard has reported a case of universal exfoliating erythrodermia resembling pityriasis rubra in which tubercles containing tubercle bacilli were present in the papillary and subpapillary portion of the derma.

Pathology.—There is but little doubt that dermatitis exfoliativa represents a symptom-complex of varied origin. The primary forms are, in all probability, the result of a toxæmia of varying kind, while the secondary varieties are the result of local irritation occurring in subjects with a special predisposition. Pityriasis rubra is possibly a manifestation of tuberculosis, but the proof of this still awaits more extended observation and study.

All those who have studied the histopathology of the malady are practically agreed as to its inflammatory character, but the accounts differ a good deal as to the details of the histological changes present. No doubt many of these differences are due to differences in the stages at which the studies were made, and perhaps not all were studying the same affection. It is altogether likely that the secondary forms, such as follow eczema, for example, present features not found in the disease when it is primary.

Pathological alterations are present in both the epidermis and the corium, the former being secondary to the latter. The changes in the epidermis consist of a slight widening of the rete and alterations in keratinization, as shown by a diminution or entire absence of the granular layer and retention of the nuclei of the cells of the horny layer (parakeratosis).

The papillæ of the corium are somewhat œdematous, their vessels and those of the subpapillary network are dilated and surrounded by an exudation of leucocytes, connective-tissue cells and "mastzellen." In advanced stages there is atrophy of both the epidermis and the papillary body—the former is narrower than normal and the latter has entirely disappeared.

Diagnosis.—When fully developed the affection presents a picture readily recognized. The intense redness of the skin, the abundant and continuous desquamation, and the wide distribution of the eruption involving the whole surface of the skin, are altogether characteristic. In universal eczema, which is rare, there is usually more or less thickening of the skin, the scaling is much less abundant and oozing and crusting occur in places. It is to be remembered, however, that derma-

titis exfoliativa may follow an extensive eczema. Psoriasis is rarely universal, the scaling is much thicker and is laminated. In its very early stages it may be confounded with recurrent scarlatiniform erythema, but its prolonged course and the frequent previous existence of an extensive eczema or psoriasis and the absence of a history of repeated attacks which characterize the latter will serve to distinguish the two. The distinction between the erythrodermic stage of granuloma fungoides and pityriasis rubra may at times be very difficult and even impossible for a time. In a case of the former, under the author's observation for a number of years, the appearance of the tumor stage was preceded by a typical exfoliative dermatitis lasting for eighteen months.

Prognosis.—The course of all forms of the disease is, in most cases, a more or less prolonged one, although exceptionally it may run an acute course of some weeks and then end in recovery, or, in rare cases, may terminate fatally. In the majority of cases of the Wilson-Brocq type, recovery takes place after some months, but relapses are not uncommon and the affection may last for an indefinite period. In pityriasis rubra the prognosis is unfavorable, the disease continuing for years and eventually causing the death of the patient. All the cases seen by Hebra and Kaposi ended fatally, but more recent observations have shown that the affection is not invariably fatal.

Treatment.—Patients usually do much better if kept in bed. They should have plenty of easily digestible and nutritious food, and should abstain from tea and coffee and alcoholic beverages. Quinine is probably the most useful internal remedy and is especially indicated in the cases with fever (Crocker). Mook advocates very large doses, 30 to 80 grains a day (2.0 to 5.30). Opinions differ a good deal about the usefulness of arsenic, but the majority of authorities agree that it is of little use in most cases, and may be harmful. If useful at all, it is so chiefly in the latter stages. Its uselessness in pityriasis rubra has been pretty definitely proved. Kaposi saw recovery take place in this affection after the internal administration of carbolic acid.

Frequent warm baths, weakly alkaline or with starch, bran or gelatin added, followed by inunctions of some bland ointment, such as equal parts of lanolin and vaselin, or cold cream, will often afford much relief. Engman and White advocate the application of a dusting powder to the entire surface, in quantities sufficient to keep the skin dry, as the best form of local treatment, the former recommending cornstarch, the latter borated talcum.

DERMATITIS EXFOLIATIVA EPIDEMICA

Synonyms.—Epidemic eczema; Dermatitis epidemica; Savill's disease.

In 1892 Savill reported an epidemic of a previously undescribed form of dermatitis, which occurred in several of the Poor Law Infirmaries of West London. His account of the affection was based upon

165 cases under his observation in the summer and autumr of the previous year. Similar epidemics have since been observed in London (Crocker), and a few sporadic cases have been seen in America by Fordyce, and Colby and Winfield.

Savill defined the disease as "a contagious malady in which the main lesion is a dermatitis, sometimes attended by the formation of vesicles, always resulting in desquamation of the cuticle, usually accompanied by a certain amount of constitutional disturbance, and running a more or less definite course of seven or eight weeks."

Symptoms.—The affection occurs under two forms, viz., a moist form resembling eczema, and a dry form resembling pityriasis rubra. It begins as patches of small red papules which appear first, in most cases, upon the upper extremities and the face. These spread and new patches appear until the greater part or the whole of the skin is covered with the eruption (in one-half of Savill's cases it was universal). In the moist form the papules are succeeded by vesicles in the course of two or three days which soon rupture or dry up and are followed by desquamation. In the dry form no vesicles appear, but the papules are followed directly by desquamation. In a small number of cases the first manifestation of the disease was an erythema resembling the papular form of erythema multiforme. At the acme of the attack the skin is very red, decidedly thickened and covered with an abundance of epidermic scales. In all the severe cases the lingual mucous membrane is inflamed, and there is conjunctivitis with loss of the hair and nails. After a course lasting six or eight weeks, the redness subsides, the scaling grows less, the skin becomes smooth but still thickened and more or less pigmented. The subjective symptoms are itching and burning pain, which may be at times extreme. In most cases there is considerable prostration, and in the later stages some elevation of temperature, varying from 99° to 100° F. Diarrhœa is a common symptom, and albuminuria occurs in a large proportion of the cases with extensive eruption. Crocker noted enlargement of the occipital and submaxillary glands in several of his cases. Boils and carbuncles are common sequelæ.

Etiology and Pathology.—In the great majority of cases the patients are past middle life and many of them are between sixty and seventy years of age. Children, however, are occasionally attacked. Crocker saw a case in a boy eleven years old. Men are more frequently affected than women. There is apparently but little doubt about its contagiousness. Its rapid spread and the occasional occurrence in nurses and attendants cannot readily be explained in any other way.

Risien Russell found in the scales and fluid from unbroken vesicles a diplococcus resembling the staphylococcus pyogenes albus, but differing from that organism by certain cultural peculiarities. Inoculation experiments with this organism, however, were negative. Echeverria, studying the histology of the affection in Unna's laboratory, found that it differs altogether histologically from chronic eczema,

but, like that affection, belongs to the catarrhs of the skin, more particularly to the parakeratoses. It is especially distinguished by a peculiar form of degeneration of the nuclei of the cells of the prickle-cell layer which he designates "peridiaphania" of the nuclei.

Diagnosis.—As already observed, the moist cases bear some resemblance to eczema, the dry ones to pityriasis rubra, but it differs markedly from both these by its epidemic occurrence, contagiousness and self-limited course. It differs very decidedly from eczema by the much more pronounced thickening of the skin, the more abundant exfoliation and the occurrence of death in a considerable percentage of the cases.

Prognosis and Treatment.—In about thirteen per cent. of Savill's cases death occurred usually from exhaustion. In some other localities the mortality was much lower, as low as five per cent. (Crocker). Relapses are frequent and second attacks occur occasionally.

The course of the malady is but little influenced by treatment, general or local. The same local remedies are indicated as in other forms of exfoliating dermatitis—mild antiseptic ointments, or, better, dry treatment with dusting powders, such as the borated talcum. In a few instances the spread of beginning patches was apparently checked by painting them with collodion or tincture of iodine (Crocker).

ERYTHEMA SCARLATINIFORME

Synonyms.—Erythema scarlatinoides; Desquamative scarlatiniform erythema; Recurrent scarlatiniform erythema; Dermatitis scarlatiniformis recidivans.

Definition.—An affection distinguished by an eruption resembling the eruption of scarlatina.

Symptoms.—Erythema scarlatiniforme is characterized by a bright-red, usually diffuse, but occasionally somewhat punctiform, rash resembling, as its name indicates, the rash of scarlet fever. While the eruption may occupy any portion of the skin, it is seen most frequently upon the trunk, which it may cover entirely, or in part only as ill-defined patches of varying size. The face is affected only infrequently. Its appearance is usually accompanied by slight, exceptionally considerable elevation of temperature with chilliness and malaise. After a duration of two or three days, it begins to fade and is followed by desquamation, usually of a branny character, sometimes quite abundant, lasting from five to eight days, the amount and duration depending upon the intensity of the eruption (*vid.* p. 75).

In a rarer and more severe type, which, on account of its marked tendency to recurrences, is known as recurrent scarlatiniform erythema, the symptoms are usually much more pronounced. An attack usually begins with chilliness, nausea, headache and fever, which precede the eruption by some hours. The eruption is usually quite extensive, covering the entire trunk, or, at times, the entire cutaneous surface, is accompanied by considerable itching and burning and is followed

FIG. 13.—Desquamation following recurrent scarlatiniform erythema.

by an abundant desquamation beginning about the third or fourth day, occasionally with shedding of the hair and nails (Fig. 13).

In this variety there may be many recurrences, but there is a decided tendency for the attacks to grow milder with each recurrence. In a marked case under the author's observation for a considerable time, in which there were many attacks, this progressive diminution of the severity of the symptoms was a very noticeable feature.

Etiology and Pathology.—Although not yet actually proved, there is little doubt that this scarlatiniform erythema is a manifestation of a toxæmia which may be produced by toxins of diverse kinds. It is, at times, observed in connection with other diseases of a general character, as a symptom of some general infection, such as rheumatism, syphilis, variola, and sepsis. It is occasionally produced by the ingestion of certain drugs, such as quinine, belladonna, the various combinations of salicylic acid, and by the injection of various sera employed therapeutically. In these last, idiosyncrasy plays a prominent part, since the eruption can be produced only in certain individuals.

According to Leloir and Vidal, Brocq and other French dermatologists who have specially studied the affection, the recurrent form should be separated from the ordinary variety, not only because of the pronounced tendency to recurrences, but because it probably is due to different causes.

A study of sections of the skin from the author's case above referred to showed a pronounced parakeratosis, the horny layer being held in place only by a few greatly elongated slender corneous cells. The stratum granulosum had almost entirely disappeared, being represented by a few cells scattered here and there at the extreme margin of the rete. The rete mucosum showed but little change beyond a slight increase in width, and vacuolation of a few of its cells. The most notable change was seen in the papillary layer of the corium. In this there was a considerable round-cell exudate situated along the margins of the papillæ and around the vessels. In places this exudate was so abundant as to obscure the line of demarcation between the papillæ and the overlying rete.

Diagnosis.—The malady is to be distinguished from scarlatina, which it at times resembles very closely, by attention to the following points: the eruption is in most cases diffuse instead of punctiform like the eruption of scarlet fever, and if punctiform, it is only so in the beginning, usually becoming diffuse after a little time. It begins upon the trunk and is often limited to that region. Sore throat is, in the great majority of cases, absent, and if present is slight. The so-called strawberry tongue is never present. Desquamation begins earlier than in scarlet fever, as early as the second or third day. There is no history of contagion, no nephritic symptoms, and in many instances a history of several, sometimes many, attacks.

Treatment.—The treatment is largely symptomatic and expectant. Some restriction of the diet and the administration of a saline laxa-

tive are all that is necessary in many cases. If there is much itching and burning, a dusting powder of talc and bismuth subcarbonate, with one per cent. of menthol, may be used, or a lotion of carbolic acid, one per cent., with two or three per cent. of glycerin. In the recurrent variety a careful search should be made for the possible cause. The diet should be carefully looked after and the possibility of its drug origin should not be overlooked.

DERMATITIS EXFOLIATIVA NEONATORUM

Synonyms.—Keratolysis neonatorum; Ritter's disease.

Definition.—A dermatitis accompanied by exfoliation occurring within the first few weeks after birth.

This rare affection was first described by Ritter, in 1878, his description being based upon the observation of 297 cases seen in the Prague Foundling Asylum within a period of ten years.

Symptoms.—It begins with an erysipeloid redness in the face, usually about the mouth, and spreads thence to the neck, trunk, and extremities. The skin is swollen and slightly translucent at first, and the horny layer of the epidermis, loosened from its attachment to the lower layers, may be readily pushed off or wrinkled up by the fingers or by friction of the clothing. Within a few days it dries up and exfoliates. In places flaccid bullæ, with very scanty fluid contents, are formed, which soon dry into thin, rather greasy crusts. When fully developed the skin is covered with scales and in places with thin crusts, beneath which it is red and dry or slightly moist. About the mouth radiating fissures form, and the lips are swollen, the lids are covered with scales, so that the eyes cannot be fully opened, and the mucous membranes of the mouth, nose, and the conjunctivæ may share in the inflammation. The disease is most pronounced in the face and on the trunk, the extremities being comparatively little involved. It is rare in the first two or three days after birth, most frequent in the second week, and infrequent after the fifth. It lasts from eight to ten days in mild cases, and from three to four weeks in the severer ones. The disease is usually afebrile in uncomplicated cases, but digestive disturbances are common and pulmonary complications occasionally occur. Furuncles and abscesses are frequent sequelæ.

When recovery takes place, the redness gradually diminishes, the scaling grows less and less, and finally disappears, the first signs of recovery appearing in the regions first attacked.

Etiology and Pathology.—Ritter regarded it as a pyæmic affection, an opinion shared by Escherich. Kaposi thought it due to an increase of the physiological exfoliation which occurs in young infants. Luithlen is inclined to regard it as a toxic erythema. In a number of the reported cases it began with blebs like an acute pemphigus, assuming the features of an exfoliative dermatitis later (Knöpfelmacher and Leiner, Hedinger). In several instances it occurred in two or more

children cared for by the same nurse, an occurrence indicating the possibility of its transmission from the sick to the well. Indeed, there is considerable evidence of a convincing character, which is increasing, that it is closely related to, if not identical with, the so-called pemphigus neonatorum, an affection which the author, along with a number of other authors, believes is nothing more than impetigo contagiosa occurring in new-born infants. Winternitz, Hansteen, and Dalla Favera found the staphylococcus, the first-named, in the blood, in the crusts, and the secretion. Riehl found a fungus characterized by a long and slender mycelium in the scales, but this finding has not been confirmed by others.

The histopathology, as described by Winternitz, Luithlen, and Dalla Favera, does not differ essentially from that of other forms of exfoliative dermatitis. The horny layer of the epidermis is wanting in many places, lost through exfoliation. The rete is increased in thickness chiefly by œdema, shows numerous mitoses, and contains a number of leucocytes. In places where blebs have formed the upper layers of the rete are separated from the deeper ones by fluid exudation. The papillary layer and subpapillary portions of the corium are œdematous, the vessels dilated and surrounded by a more or less abundant exudate of leucocytes, connective-tissue cells, and considerable numbers of "mastzellen."

Diagnosis.—The rapidly spreading redness, the extensive exfoliation, and the patient's age are quite characteristic features. Attempts to differentiate it from the pemphigus of the new-born are usually futile and superfluous, if, as seems probable, the two affections are identical or variants of the same disease.

Prognosis and Treatment.—The prognosis is very unfavorable, a large proportion of the infants dying. One-half of all Ritter's cases terminated fatally, but these were all foundlings.

Especial attention should be given to the nourishment of the infant and the preservation of the bodily heat. Locally, mild antiseptic ointments should be applied to the inflamed parts, or, what is probably better, the skin should be abundantly covered with some dusting powder, such as borated talcum, as recommended by White in the treatment of the exfoliative dermatitis of adults. Tamm obtained unusually good results from the dry treatment, using xeroform, a compound of bismuth tribromophenate.

PRURIGO

Synonyms.—Fr., Strophulus prurigineux; Ger., Juckblattern.

Definition.—An extremely chronic inflammatory disease, beginning in very early life, characterized by an eruption of small papules, the color of the skin or pale red, accompanied by violent itching.

Symptoms.—Two varieties of the malady are usually recognized, viz., a mild form, Prurigo mitis (Prurigo of Willan), and a severe form, Prurigo ferox, Prurigo agria (Prurigo of Hebra). These differ

from one another only in degree, not in any essential feature. The affection begins in the great majority of cases in infancy or early childhood, with an eruption of papular wheals (papular urticaria, lichen urticatus), accompanied by itching. After a variable period these are succeeded by small, at first very little elevated, papules the color of the skin or pale red, which are accompanied by severe and more or less continuous itching. As the result of scratching, many of the papules are capped by a small blood-crust and after a while become more prominent. The eruption is most abundant upon the extensor surfaces of the extremities, more so upon the forearms and legs than upon the upper arms and thighs, and in mild cases may be limited to these regions. In the severe form it also occurs upon the trunk, especially upon the sacrum and buttocks. The palms and soles, the flexures of the elbows, popliteal spaces, and the scalp remain free even in the severe forms of the disease. In the mild cases the face escapes completely, but may show a moderate eruption in the severe ones. In prurigo ferox the eruption is very abundant and extensive, covering the greater part of the cutaneous surface, and the itching is of the most distressing character. The skin is dry and harsh, the hairs broken off by continuous rubbing. There is more or less pronounced pigmentation and numerous small scars, which have followed the superficial wounds inflicted by scratching. Secondary changes of an inflammatory character are frequent. Small furuncles, pustules of an impetiginous or ecthymatous character, the result of infection by the nails, and oozing or crusted eczematous patches, are common. A noticeable and characteristic feature is enlargement of the lymphatic glands, which, in the inguinal region, may form nodular masses as large as an egg, or larger.

The course of the malady is extremely chronic. In the severe form it continues throughout the patient's life. The symptoms usually undergo some amelioration in warm weather, with a corresponding aggravation in the winter. The type of the disease is usually determined by the character of its beginning. The cases characterized by mild symptoms in the early stages are likely to remain mild, while the severe type usually begins as such.

Etiology.—Prurigo is a disease of the poor, of those who receive insufficient or improper food and live under unhygienic conditions. It is common in parts of central Europe, especially in Austro-Hungary, but is fortunately very rare in the United States, where the native cases are of the mild type. It begins, in the great majority of cases, in infancy or early childhood, but that it does so invariably, as was maintained by Hebra, has been disproved by later observers. Crocker saw it appear as late as at twelve years of age. Ehlers saw "many cases" in which it first appeared between ten and fifteen years of age, and a few between fifteen and thirty. Men are much more frequently affected than women, according to Ehlers's statistics, more than twice as often. The primary cause is quite unknown.

Pathology.—The pathology and pathogenesis of the disease are still matters of debate. Hebra regarded the papule as the primary lesion, but Auspitz and, much more recently, Ehlers believed the pruritus to be the primary symptom, considering the papule the product of the scratching. Ehlers based his opinion on the fact that after the papules have been made to disappear by baths and ointments the itching still persists. There is no doubt that in most cases the malady begins with urticarial symptoms, much too frequently to be a mere coincidence, as Ehlers believes.

The histological features of the papule of prurigo are a spastic œdema of the cutis, with a moderate perivascular cellular exudate, swelling of the papillæ, and, in the prickle-cell layer of the epidermis, small circumscribed areas of softening which in prurigo ferox become cavities containing epithelial débris. The erector pili muscles are more or less thickened (Unna, Holder). While the histological changes are described by many authorities as practically the same as those of papular eczema, Unna could find no resemblance between the papule of prurigo mitis and the papule of eczema.

Diagnosis.—Prurigo is to be distinguished chiefly from papular eczema and, in the early infantile stages, from urticaria. It differs from the former by the uniformly papular character of the eruption, by its extreme chronicity, by the great severity of the itching, and by the occurrence of lymphatic gland enlargement. It differs from urticaria by the appearance of small, pale papules, sooner or later, which do not exhibit the transient character of the urticarial wheal. It is sometimes confounded with long-standing scabies, but is readily distinguished from that affection by the absence of the characteristic burrows and the differences in the distribution of the two eruptions. The presence of an eruption will serve to distinguish it at once from pruritus, a disease with which it was formerly confounded.

Prognosis and Treatment.—The affection is curable in the early stages, but relapses are frequent. When the malady is thoroughly established, or of the severe type, it is practically incurable, although even in these much may be done to alleviate the symptoms.

The patient should have an abundance of easily digested, nutritious food, and should be placed under the best hygienic conditions. Ferruginous tonics and cod-liver oil are frequently of decided service. Cannabis indica, either the tincture or solid extract, is occasionally of decided service in allaying the itching, Crocker especially commending its use. Kaposi occasionally observed a decided improvement of the symptoms from the internal use of carbolic acid in considerable doses. Pilocarpin, hypodermatically, has been employed with occasional good effect.

Warm baths, either plain or made alkaline by the addition of bicarbonate of soda or borax, and baths containing starch or bran are useful. These should be used in conjunction with ointments of menthol, one-half to one per cent., or of phenol, two to three per cent. In

using the latter, care should be taken when applying it to large areas that toxic effects are not produced by absorption. A favorite remedy with Kaposi was an ointment of naphthol, five per cent., in adults, one to two per cent. in children. This is to be rubbed in every evening, and every second day a bath with sulphur-naphthol soap should be taken. Ointments of tar, of resorcin, and of salicylic acid are also of more or less use at times.

PRURIGO NODULARIS

Synonyms.—Multiple tumors of the skin, accompanied by intense itching; Persistent Papular Dermatosis; Lichen Obtusus Corneus; Urticaria Perstans.

Definition.—A rare chronic inflammatory disease characterized by intensely itching papules or nodules.

Symptoms.—This affection was first described by Hardaway, in 1880, and a very limited number of additional cases have since been observed and reported under various titles by Johnston, Schamberg, and Hirschler, Brocq, C. J. White, Hartman, and a few others.

It is characterized by small to large pea-sized, and occasionally larger, rather flat, discrete papules or nodules, which are at first smooth and pinkish in color, but later are covered with an adherent scale, and become violaceous or brownish. Many of the lesions show a well-marked central depression or umbilication, and occasionally a small vesicle on the summit. Intense itching accompanies the malady, limited, as a rule, to the nodules, but occasionally affecting other parts of the skin. It is an extremely chronic affection, lasting for years, and when the nodules have once been fully developed they show but little or no perceptible change for months (Fig. 14).

Etiology and Pathology.—With the exception of one or two doubtful cases, the disease has been seen in adult females only. Nothing is known about its direct cause.

As may be readily inferred from the number of titles given it, there is great uncertainty concerning the exact nature and place of the malady. Those who have studied its histopathology (Heitzman, Johnston, Schamberg and Hirschler, C. J. White) are agreed as to its inflammatory character. The horny layer of the epidermis is greatly thickened, and there is a more or less pronounced increase in the breadth of the rete. In the papillary and reticular portions of the corium there is an exudation of round cells, most abundant about the vessels. Schamberg and Hirschler found enormous numbers of "mast-zellen" in their cases. In Johnston's case there were minute vesicles in the central portion of the prickle-cell layer of the rete, and a cellular exudate about the nerve-branches in the corium, as well as about the vessels.

Diagnosis.—The large size and discrete character of the nodules, the very chronic course, and the intense itching are so characteristic

of the affection that no difficulty is likely to be experienced in the diagnosis.

Prognosis and Treatment.—The prognosis is very unfavorable as regards a cure. As already observed, it pursues an extremely chronic course, lasting for many years. It is extremely rebellious to treatment, but temporary relief is afforded by baths and the use of lotions or ointments of menthol or carbolic acid. No internal treatment has been found of any use.

Fig. 14.—Prurigo nodularis.

LICHEN PLANUS

Synonyms.—Lichen ruber planus; Lichen psoriasis.

Definition.—An acute or chronic, usually the latter, inflammatory disease distinguished by an eruption of small red or violaceous, flat-topped, shining papules with angular bases, many of which present a shallow central umbilication (Plate I).

This affection was described in 1869 by Erasmus Wilson as identical with the lichen ruber of Hebra, and it is still described by most German authors as a variety of that disease. The studies of Robinson published in 1883 and in 1889 have quite conclusively demonstrated,

however, that it is related to lichen ruber neither histologically nor clinically, and it is regarded by most American and English writers as an independent disease.

FIG. 15.—Lichen planus. Unusually profuse eruption.

Symptoms.—The eruption consists of small, discrete, pinkish, red, or yellowish-red, flat papules with glazed tops and angular or polygonal bases, which, as they grow older, usually become a dull crimson or a bluish-red. At first smooth, and in many instances slightly umbili-

cated, they are sooner or later covered with a thin, whitish epidermic scale, which is usually adherent, so that it cannot be brushed off. Many of the papules show grayish or whitish points and lines, a symptom to which attention was called by Wickham, who considered it pathognomonic and therefore of much value in diagnosis. The papules are at first discrete and seldom increase much in size after their appearance, but, as new lesions continue to appear between the earlier ones, elevated and circumscribed patches are frequently formed, viola-

FIG. 16.—Lichen annularis.

ceous in color and covered with a fine adherent silvery-white scale, in which it is no longer possible to distinguish the individual papules. As a rule the eruption is symmetrically distributed, but it may be unilateral or limited to a single region (Fig. 15). While it usually shows no definite arrangement, it sometimes occurs as rings, or semicircles (Fig. 16), or sharply marginate disks with depressed centres (Fig. 17) (lichen annularis). The larger rings are composed of a number of discrete and confluent nodules, but the small ones arise through the central atrophy and peripheral extension of single lesions. Not very infrequently it assumes a linear arrangement, the eruption under such circumstances occurring along the course of a superficial scratch (Fig.

18) (lichen linearis). In rare instances it is distributed over the course of some nerve trunk, such as the sciatic nerve, forming long band- or ribbon-like patches (Fig. 19) several inches wide. Although it may occur in any region, it shows a preference for certain localities, such as the flexor surface of the wrists, a common site, of the forearms and the anterior surface of the knees and legs. It varies greatly in extent. At times it is limited to a few scattered, discrete papules situated on the wrists, forearms, and legs, or to a single small patch; at other times it is widespread and occupies the greater part of the skin. When the papules disappear they usually leave slightly atrophic spots and pigmentation, which varies from a pale sepia to dark brown and which usually persists for some months, sometimes for many

FIG. 17.—Lichen planus discoides.

months. There is usually more or less itching, and sometimes it is so severe as to cause the patient great distress.

In a certain proportion of cases the mucous membranes of the mouth, the glans penis, and the labia are affected, usually coincidentally with the skin, but in exceptional cases alone. In these situations the papules, constantly moist, are white instead of red, and are less elevated than those upon the skin. Upon the tongue they are frequently arranged symmetrically upon both sides of the median line, sometimes as a small patch occupying the centre of the organ. Upon the cheeks they are apt to be situated in the interdental space, forming slightly elevated white linear patches upon both cheeks. Upon the glans penis and the labia the lesions are white, as upon other mucous membranes, but upon the former, when it is habitually uncovered, they are pink in color, approaching in appearance the cutaneous lesion; in this situation the eruption occasionally occurs as very slightly elevated small rings.

As a rule the malady pursues a chronic course, lasting from a few months to a year or two. Exceptionally it occurs as an acute affection, either beginning as such or as the sequel of the chronic form.

FIG. 18.—Lichen planus. Lines of papules occurring in scratch-marks. Many of the papules with rounded instead of flat tops.

In the acute cases the eruption appears suddenly and spreads rapidly, covering the greater part of the skin in the course of a few days. The papules are usually bright red, quite small, and very numerous,

and more or less pronounced constitutional disturbance, with some elevation of temperature, is present in the severer cases. Such cases

Fig. 19.—Lichen planus. Band-like distribution.

may run a rapid course, the eruption disappearing at the end of a few weeks, or they may assume the chronic form and last for months.

Variations from the ordinary type of eruption are occasionally met with. Although in the vast majority of cases the eruption is strictly papular from the earliest to the latest stages, in rare instances vesicles and blebs appear at some time in the course of the affection, as in the cases reported by Kaposi, Unna, Leredde, and others. At first there was an inclination to attribute such atypical lesions to arsenic, which is employed frequently in the treatment of the malady, but it was soon shown that they also occurred in those who had not had any arsenic. In a series of seventeen cases collected by Whitfield, nine had no arsenical treatment.

Under the name lichen ruber moniliformis, Kaposi has described an extraordinary case in which the eruption, consisting of pea-sized nodules, formed thick bands looking like rows of beads situated in the flexures of the arms and legs parallel with the long axis of the limbs, and upon the abdomen and buttocks. Somewhat similar cases have been described by Rona and Dubreuilh. As lichen planus erythematosus, Crocker has described a rare form in which the papules were of a deep crimson color and were very soft to the touch.

In old cases, thick, dark-red or bluish-red patches, with verrucous surface covered with fine scales, occasionally appear upon the legs, together with large, discrete, wart-like nodules (lichen sclerosus; lichen verrucosus).

Etiology.—The direct exciting cause of lichen planus is still unknown. Its incidence is apparently uninfluenced by sex, and it is most common between the ages of twenty and fifty, although it is not unknown in children and the aged. In a considerable proportion of cases the patient exhibits symptoms of nervous exhaustion, the consequence of worry, overwork, or insufficient or improper nourishment. Occasionally it has been observed to follow traumatism, and the eruption frequently occurs in those already the subjects of the disease at the site of scratches or superficial abrasions. In recent years the possibility of its being due to some toxin of unknown character and origin has been suggested by a number of observers (Fordyce, Montgomery, and Alderson).

Pathology.—Lichen planus (Fig. 20) is an inflammation having its principal seat in the papillary and subpapillary portions of the derma. According to Crocker, the papule is situated, in most cases, if not in all, about a sweat-duct, but the observations of Fordyce and other investigators have shown this to be erroneous. Pronounced histological changes are present in both the epidermis and in the corium, those in the former probably being secondary. In the epidermis there is a pronounced hyperkeratosis, a decided increase in the thickness of the granular layer, a broadening of the rete (acanthosis), with intercellular œdema, and in the later stages colloid degeneration of some of the prickle-cells. The papillæ and subpapillary portion of the corium are occupied by a very dense, abundant exudate of connective tissue and small mononuclear cells, which more or less completely ob-

literates the interpapillary prolongations of the rete and the dividing line between the epidermis and the corium. The nature of the small round cells is still somewhat in doubt, but most authorities regard them as leucocytes. Unna asserts that plasma and polymorphonuclear cells are never present in this exudate, but Fordyce has seen both varieties of cell, and Sabouraud has found occasional giant-cells which he believes to be of epidermic origin. The umbilication present in some of the papules is the result of the peg-like thickening of the horny layer, which exfoliates and leaves a small depression. In the

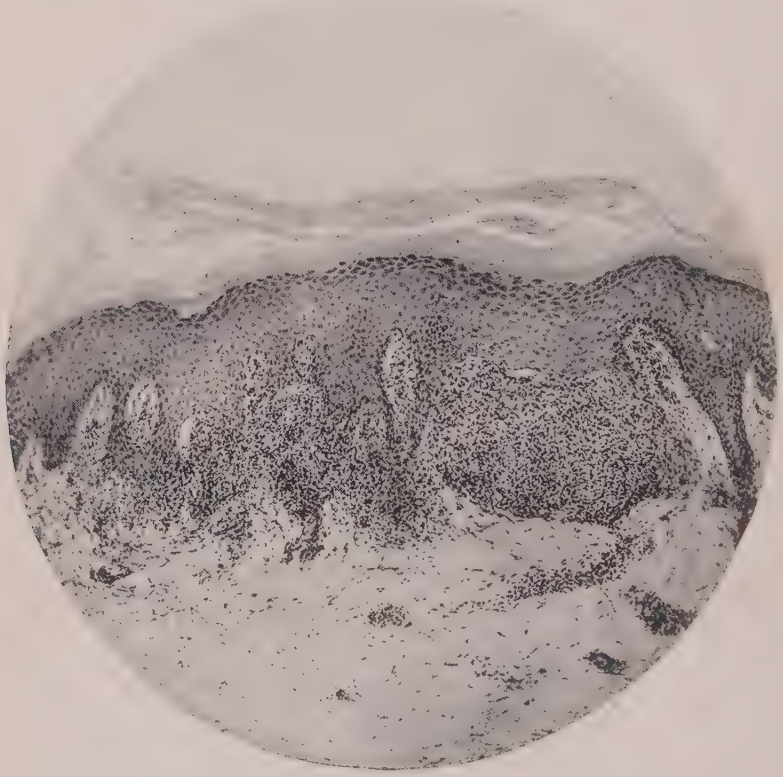


FIG. 20.—Lichen planus.

regressive stages of the papule pigment granules are present in the cells of the epidermis and in the corium.

Diagnosis.—Lichen planus is to be distinguished from other papular affections by the flat, shining tops of the papules, the frequent umbilication, the presence of the minute puncta and striæ described by Wickham, their polygonal or angular bases, and their dull crimson or violaceous color. When the lesions are closely aggregated, forming thick patches with a finely scaly surface, such patches may be mistaken for squamous eczema or psoriasis. From these they are to be dis-

tinguished by the presence of characteristic papules about the borders of the patch or some little distance away from them, and by the difference in the quality of the scales, which are fine and silvery-white when at all abundant.

Prognosis.—Although the affection may persist for several months or a year or two, recovery eventually takes place, and relapses, although occurring, are not frequent. Even in extensive cases the patient's general health, as a rule, is not affected, although when the itching is severe loss of sleep may lead to neurasthenia or a decided increase of this symptom when already present.

Treatment.—When the patient shows symptoms of neurasthenia, as is not uncommon, he should spend considerable time in the open air, have an abundance of wholesome food, with plenty of milk, cream, and eggs, and should be freed from mental stress and worry as much as possible. Quinine, iron, and cod-liver oil may be given in moderate doses for their tonic effect. Among the internal remedies which more or less directly influence the eruption, arsenic and mercury occupy the first place. The former may be given as Fowler's solution, in doses of from five to ten drops three times a day, or as the solution of the arseniate of soda, in the same doses. Arsenic trioxide may be given with advantage in the so-called Asiatic pill, each pill containing one (0.065) grain of black pepper and from a twenty-fifth to a twentieth of a grain (0.025–0.003) of arsenic. Mercury may be employed as the bichloride in doses of a twenty-fourth to a sixteenth of a grain (0.025–0.004), three times a day. Donovan's solution, which combines both drugs, may be given with good effect in doses of five drops three times a day. In the cases in which itching is pronounced, salicylate of soda or aspirin, in doses of ten grains (0.65) four times a day, will sometimes afford marked relief from this most annoying symptom, or salicin, in the same dose, as recommended by Crocker, may be given instead as less apt to disturb the stomach.

Local treatment is quite as necessary as the internal; indeed, in cases of limited extent, it may suffice to remove the eruption. Warm alkaline baths, or baths containing bran or starch, are frequently of use in extensive cases accompanied by itching. One of the most useful lotions is the following:

℞.
Liq. carbonis detergent. ..... f℥ i (32.0)
Phenolis ..... ℥ss (2.0)
Glycerini ..... f℥ i (32.0)
Aquæ ..... q. s. ad f℥iv (120.0)
M.
Sig. Apply with cotton mop three times a day.

When itching is not a prominent symptom, the phenol may be omitted. A lotion of thymol containing one-half grain (0.03) to the ounce (32.0) of lime water, with a half drachm (2.0) of glycerin to each ounce (32.0), is a cleanly and agreeable application which frequently proves useful.

When the disease occurs in dry, scaly patches the local treatment

is much the same as in psoriasis, and ointments are usually more useful than washes. Oil of cade in a twenty-five per cent. ointment is an effective remedy. It should be well rubbed in once or twice a day. In thick, old, and dry patches the addition of two to four per cent. of salicylic acid increases the efficacy of this ointment very decidedly, or a ten per cent. plaster of salicylic acid may be used with good effect. An ointment of chrysarobin, five to eight per cent. strength, is likewise a useful remedy in the treatment of such patches. The X-ray is frequently of much service, not only relieving the itching, but bringing about the involution of the patch within a comparatively short time. Occasionally, however, it fails.

LICHEN NITIDUS

This affection was first recognized by Pinkus as an independent disease in 1901, and more fully described by him in 1907. Other cases have since been reported by Arndt, Lewandowsky, Kyrle and McDonagh, Sutton and Bachrach.

Symptoms.—It is distinguished by an eruption of small, shining, flat-topped polygonal papules, which are red, brownish, or the color of the normal skin, resembling the papules of lichen planus. In the great majority of cases the eruption is situated upon the penis, the shaft, and the glans, but has also been seen upon the abdomen, the chest, the arms, and about the anterior border of the axillæ. The papules are at times very numerous, covering the entire shaft of the penis. No subjective symptoms of any sort accompany the eruption, and the patient in consequence is sometimes quite unaware of its existence. In a number of cases it was discovered accidentally when examining the patient for another ailment. The course of the affection is sluggish, papules coming and going for months or years. Occasionally the eruption disappears completely.

Etiology.—Little or nothing definite is known about its cause. With but a single exception, all the cases thus far observed have been in males. Kyrle and McDonagh are of the opinion that the malady is tuberculous, an opinion with which Sutton agrees, but animal experimentation has failed completely so far to support this view of its causation, although the first-named authors obtained a mild general reaction after an injection of tuberculin.

Pathology.—Histologically it is a granuloma presenting the structure of tuberculous tissue. The papules are made up of collections of round, epithelioid, and giant-cells of the Langhans type, the last being unusually numerous.

Diagnosis.—It is to be distinguished from lichen planus, the only affection for which it might be mistaken, by its pronounced predilection for the genitalia, by the absence of itching, and by its histology.

Treatment.—The affection is apparently but little influenced by treatment. In Sutton's case the eruption disappeared within a month,

while using an ointment of salicylic acid and resorcin alternately with oxide of zinc ointment; but, as the eruption may disappear without any treatment, it is uncertain how much it was influenced by the remedies employed.

LICHEN SIMPLEX CHRONICUS (Vidal)

Synonyms.—Lichenification; Nevrodermite circonscrite; Prurit circonscrit avec lichenification (Brocq).

Definition.—A chronic inflammatory disease characterized by patches of flat, quadrangular pseudo-papules, accompanied by violent itching.

Symptoms.—It begins with severe paroxysmal itching without any visible alteration of the skin, confined to a limited area. After a variable period a red, violaceous, or brownish-red patch, with ill-defined borders, appears in the itching area, made up of closely aggregated, square, flat papules. When the patch is fully developed it varies in size from that of a coin to the palm of the hand, is usually round or oval, with a border which blends imperceptibly with the normal skin, its surface somewhat elevated and traversed by numerous fine lines running at right angles to one another (Fig. 21), producing flat, quadrangular elevations resembling superficially the flat-topped papules of lichen planus. These elevations, however, are not true papules, but are nothing more than an exaggeration of the quadrilateral or lozenge-shaped areas into which the skin is normally divided, produced by inflammatory thickening. The itching comes on in paroxysms, is usually much worse at night, and is often so violent as to interfere seriously with the rest of the patient, who is apt at times to become highly nervous or hysterical. There is often but a single patch, although there may be several. The most common sites are the inner and upper surfaces of the thigh and the nape of the neck.

In addition to this circumscribed variety, Brocq recognizes a diffuse form in which the whole of a region, such as the extremities, or a considerable portion of the trunk, or even the greater part of the cutaneous surface, may be involved.

A similar lichenification is occasionally observed as a sequel of chronic eczema, particularly of the papular form. The patches are situated upon the sides of the neck and in the supraclavicular region, in the bends of the elbows and the popliteal spaces, and exceptionally on the buttocks where they meet.

Fox and Fordyce have described a lichenoid affection distinguished by patches of papules in the axillary and pubic regions, accompanied by severe itching, which the latter regards as probably a variety of the neurodermatitis of Brocq.

Etiology and Pathology.—The circumscribed form first described is much more frequent in women than in men. Indeed, almost all

the cases under the author's care have been in middle-aged women. Brocq believes it largely dependent upon the nervous system and a symptom of neurasthenia. The direct cause is quite unknown.

There is considerable difference of opinion among authorities as to the place which ought to be assigned to it among diseases of the skin. By most it is regarded as closely related to chronic eczema, if not simply a variant of it. The author is not inclined to accept this view, but agrees with Brocq and other French dermatologists that it is an independent affection.

Brocq found an increase in thickness of the rete, its interpapillary prolongations greatly increased in length, and occasionally divided or branched. The papillæ were decidedly enlarged in all directions

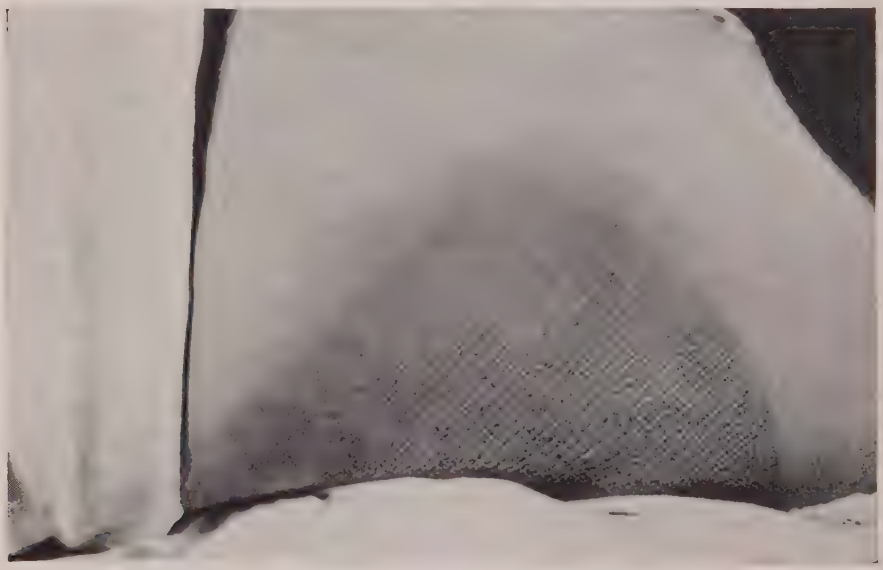


FIG. 21.—Lichen simplex chronicus (lichenification), thigh, inner surface.

and their vessels and the pilo-sebaceous follicles were surrounded by a considerable exudation of lymphoid cells. In the cases of Fox and Fordyce the latter found an acanthosis with hyperkeratosis most pronounced about the sweat-ducts. In the corium the most marked change was a dilatation of the coils of the sweat-glands, about which there was an exudation of lymphoid and plasma-cells, as well as about the vessels.

Diagnosis.—The unmistakable quadrilateral shape of the papules; the localization of the patch, most frequently on the thigh or the nape of the neck; the furious itching, and the very chronic course of the affection, are so entirely characteristic that an error in diagnosis is not likely to occur.

Prognosis and Treatment.—The affection is unusually rebellious

to treatment, and, as already observed, is of long duration. The author has derived most benefit from X-ray treatment—moderate exposures at intervals of four or five days. An ointment containing ten to fifteen grains (0.65 to 1.0) each of phenol and camphor will often afford marked relief from the itching; and if this is successfully combated a long step has been made toward cure.

PITYRIASIS RUBRA PILARIS

Synonyms.—Pityriasis pilaris (Devergie); Lichen ruber (Hebra); Lichen ruber acuminatus (Kaposi).

Definition.—A chronic affection of mildly inflammatory type, characterized by small, acuminate, firm papules covered by a horny scale, situated about the follicles.

First described by Devergie under the title pityriasis pilaris and independently by Hebra as lichen ruber, the first recognizable case is to be found in Rayer's treatise on diseases of the skin, where it is described as a peculiar example of psoriasis affecting the hair follicles, the particulars of the case having been communicated to Rayer by Tarral, who had seen it in St. Bartholomew's Hospital. In order to distinguish it from the lichen ruber planus of Erasmus Wilson, Kaposi gave it still another name, lichen ruber acuminatus. Although the relationship of the disease to Hebra's lichen ruber has been the subject of much discussion, it is pretty well agreed at the present time that the two affections are identical, and they will be considered so here, although the author formerly was inclined, for various reasons, to regard them as independent diseases.

Symptoms.—Although it may begin, in exceptional cases, somewhat abruptly, it usually appears gradually, beginning in the majority of cases in the scalp, less frequently on the face, and upon the palms and soles. In the scalp and face it appears as a more or less abundant, fine, branny desquamation, usually accompanied by some redness in the latter region, where it is most pronounced on the forehead, in the brows, about the alæ nasi, and, in men, in the mustache and beard. On the palms and soles it begins with slightly red, scaly patches, which spread until the whole region is covered with a diffuse thick scale. In rare instances it appears first upon some portion of the trunk as small, discrete, red, scaly papules. Shortly after its appearance in the scalp and upon the palms and soles, characteristic papules appear upon the backs of the hands, especially upon the phalanges, upon the extensor surface of the forearms, and later upon the trunk and lower extremities. These papules, which are the most characteristic feature of the eruption, vary in size from that of a pin-head to a hemp-seed, are red or brownish-red in color, acuminate in shape, and are topped by small, horny plugs or spines frequently containing a broken hair, imbedded in the dilated mouths of the hair follicles. At first discrete, later, by increase in numbers rather than in size, they may form cir-

cumscribed scaly patches with rough grater-like surface, resembling superficially patches of psoriasis. In fully developed cases the face and scalp are red and covered with fine white scale, looking at a little distance as if powdered. Although commonly quite dry, the scales occasionally are somewhat greasy, like those of seborrhœa, and may form crusts, which upon the scalp mat the hair together. Even in cases in which the scalp is markedly involved, the hair is seldom much affected until late in the disease. The palms and soles are diffusely thickened, the nails are lustreless, brittle, and broken, and there is more or less thickening of the skin in all the regions affected, with occasional fissuring about the joints, which may interfere more or less with movement.

The eruption is usually symmetrically distributed and varies a good deal in extent. In mild cases it may be limited to the scalp, face, neck, and upper extremities. In more severe ones it may occupy the greater part of the cutaneous surface.

Fig. 22.—Pityriasis rubra pilaris.

The subjective symptoms are usually slight, and in mild cases may be absent altogether. There may be some itching, however, which in rare instances may be so severe as to interfere decidedly with the patient's rest at night.

The malady pursues a chronic course and may last for an indefinite time. It may slowly and steadily advance, or there may be periods of remission or retrogression, followed by periods of renewed activity in which the areas already affected are increased in extent and new regions invaded.

The patient's general health, even in extensive cases, is but little affected, but occasional exceptions to this rule occur (Fig. 22).

Etiology.—The cause of the malady is altogether unknown. It usually occurs in those who have previously shown no evidence of ill-health, and is most frequent in the second and third decades of life, although it may occur in quite young children, even as early as the first year (Whitehouse). In most instances there is no evidence that

heredity plays any rôle in its production, but recently de Beurmann, Bith, and Heuyer have reported four cases in one family. Sex is without influence upon its occurrence. Milian has recently asserted that it is of tuberculous origin, basing this opinion upon clinical statistics and a positive reaction from injections of tuberculin obtained in cases under his observation; and other French observers—de Beurmann, Darier, Gaucher—are somewhat inclined to adopt this view. Vignolo-Lutati, however, reports absolutely negative results from tuberculin injections in a case studied by him.

Pathology.—Little or nothing is known about the pathogenesis of pityriasis rubra pilaris. As already mentioned, it is believed by some recent observers to be of tuberculous origin, but definite proof of this is still wanting.

As to its histopathology, it is a hyperkeratosis, most pronounced in and about the hair follicles, but not limited to these, with secondary inflammatory changes in the subjacent parts of the corium. The horny layer of the epidermis is everywhere increased in thickness, forming in the dilated mouths of the follicles, and to a less extent in the openings of the sweat-ducts, projecting plugs or spines which extend some distance into the follicles, and there is likewise a more or less pronounced acanthosis.

In the papillæ, which are increased in length, and in the subpapillary portion of the corium, there is a moderate exudation of leucocytes, with a few plasma-cells and "mastzellen," and the follicles are surrounded by a similar, but more pronounced, exudate throughout their length (Fig. 23).

Diagnosis.—The small follicular papules with horny tops, rarely absent from the backs of the hands even in mild cases; the bran-like white desquamation of the scalp and face, and the occasional rough, scaly patches about the elbows and knees, are features which sufficiently distinguish it from other affections. The diseases with which it is most likely to be confounded are pityriasis rubra and lichen planus; but the former lacks the characteristic papules about the follicles and is characterized by abundant papery scales, while in the latter the papules are flat-topped, frequently umbilicated, and of a dull crimson or violaceous color, altogether unlike the papules of pityriasis rubra pilaris.

Prognosis.—The prognosis as to recovery is unfavorable, since the disease tends to persist for an indefinite time. Improvement, however, may take place, and in exceptional cases the disease may disappear, but relapses are common. As already observed, the general health is usually unaffected, but it should be noted that all of Hebra's early cases terminated fatally.

Treatment.—When indicated by the patient's general condition, tonics, such as quinine, iron, strychnia, and cod-liver oil, may be given with advantage, although these have no direct influence upon the course of the disease. Pilocarpine has been recommended to re-

heve the abnormal dryness of the skin, but as its effects are only temporary, and as the same result may be obtained by exercise, it is better to employ the latter rather than the former. There is some difference of opinion as to the usefulness of arsenic. Hebra found it of the utmost value—indeed, all his cases died until he began its use, but later authors have failed to obtain the same results with it, and some have asserted that it is injurious. It should be reserved for the later stages of the malady, since there is apparently but little doubt that it may act injuriously when given early, and it should be given in full doses to obtain benefit from its use. Crocker found thyroid

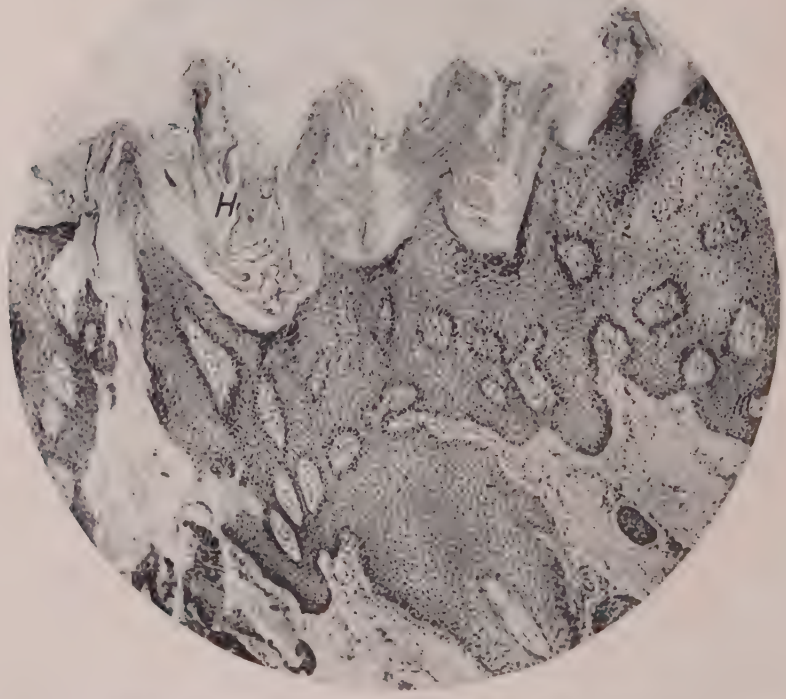
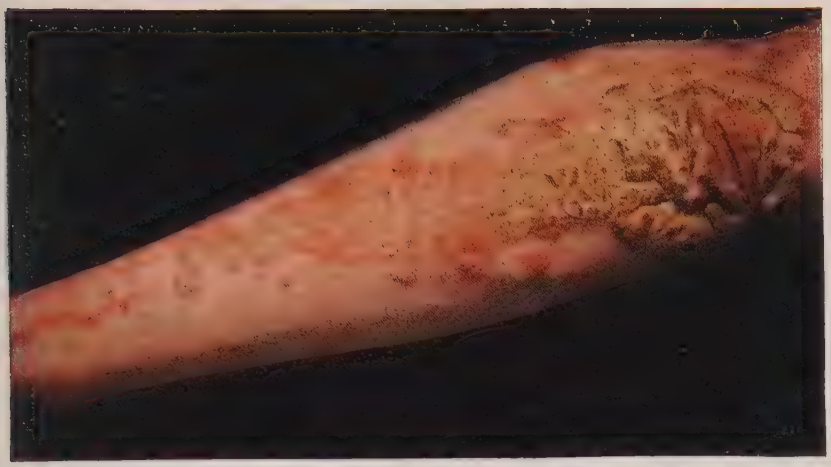


FIG. 23.—Pityriasis rubra pilaris. Note increased width of the rete and horny plug, *H*, in mouth of follicle. (Section from case under the care of Dr. H. W. Stelwagon.)

gland, beginning with five grains three times a day, and gradually increasing the dose, useful when employed in conjunction with local treatment.

In cases of average severity frequent alkaline baths, followed by inunctions with a three per cent. ointment of salicylic acid, will be found the most satisfactory local treatment. If the skin is inflamed and irritable, bran or starch baths may be used. Oil of cade, in an ointment such as the following, is likewise frequently serviceable:

PLATE II



Psoriasis.

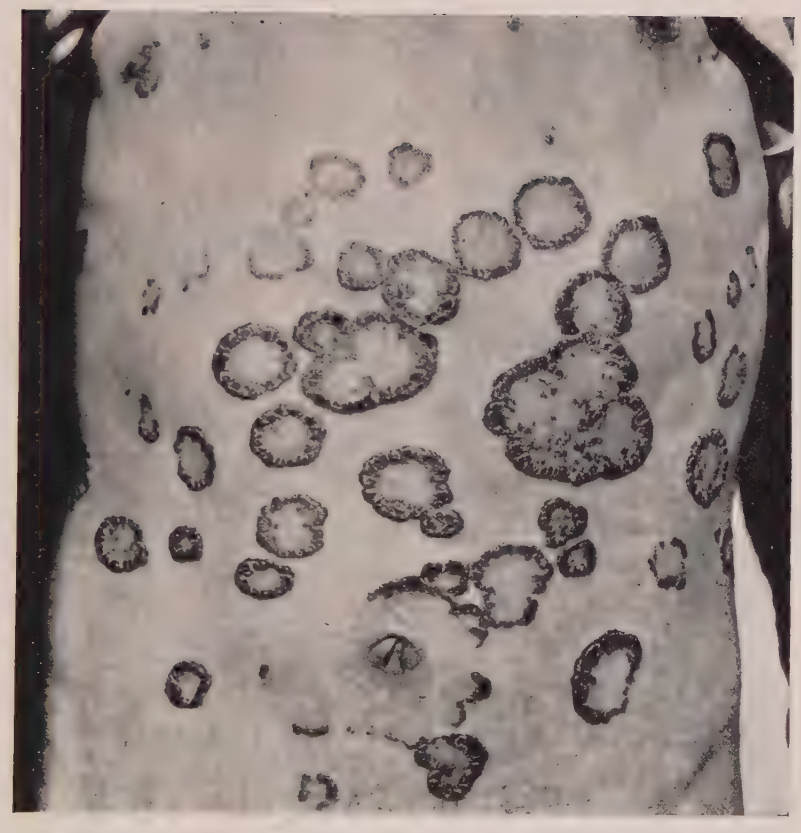


FIG. 24.—Psoriasis.

℞.
Ol. cadini f3ii (8.0)
Lanolini 3vi (24.0)
M.
Sig. Rub in after the bath.

Brocq has recommended pyrogallol, used as in psoriasis, as one of the most efficacious remedies, but besides being dirty and disagreeable, staining the underwear and bed-linen, its use over extensive surfaces is not unattended with danger from absorption. For thickened patches a 10 to 20 per cent. salicylic acid plaster is perhaps the most efficacious remedy.

PSORIASIS

Synonyms.—Lepra; Alphos; Ger., Schuppenflechte.

Definition.—A chronic inflammatory disease of the skin characterized by an eruption of red scaly papules and sharply circumscribed, round, sometimes annular, patches, of variable size, covered with a laminated, mica-like scale.

Symptoms.—The disease begins with the appearance of small, red papules, which almost at once become covered with a whitish, loosely adherent scale. These continue to enlarge peripherally for a variable time, forming sharply limited patches, varying in size from that of a large pea to a coin, and frequently much larger, which are usually rounded in shape and which by coalescence with neighboring patches frequently form larger ones with irregular borders. With their increase in size the patches become somewhat infiltrated, so that they project slightly above the surrounding skin even when the scale is removed. If, after removal of the scale, the underlying red surface is lightly scraped with the nail, a number of bleeding points appear, owing to the nearness of the vessels of the papillæ of the corium to the surface. The eruption is invariably dry from beginning to end, and is remarkably uniform in its appearance, varying less from the type than almost any other affection of the skin. While the essential features of the lesion vary very little, the course, arrangement, and distribution of the eruption as a whole present numerous variations. The entire eruption may be made up of shot to pea-size scaly papules and patches (psoriasis guttata et punctata); it may consist of a few or many dime- to half-dollar-size disks (psoriasis numularis), and these may coalesce to form extensive, irregularly shaped plaques the size of the hand or much larger, sometimes covering a half of an extremity or the greater part of the trunk (Plate II) (psoriasis diffusa). Quite frequently discoid patches undergo involution in the centre and are thus transformed into rings (Fig. 24), which, extending, coalesce with neighboring rings, forming gyrate and serpiginous figures (psoriasis circinata, psoriasis gyrata). In exceptional cases the eruption covers the entire body (psoriasis universalis).

The course of the eruption is somewhat variable. While it usually exhibits irregular exacerbations, it frequently, after reaching a certain stage, remains practically unaltered for months or even years. This is especially apt to be the case in so-called psoriasis inveterata, in which the skin is markedly thickened, covered with abundant adherent scales, and frequently fissured around the joints. Quite commonly the exacerbations and remissions show a seasonal variation, the eruption being much worse, as a rule, in cold than in warm weather.

The mode of evolution varies a good deal. As a rule, the eruption extends slowly, requiring weeks and months to reach its full development; but in a fair proportion of cases it comes out quite acutely and spreads over a large surface within a few days or a week. In these rapidly spreading cases scaling is less noticeably laminated than in the slowly extending ones, and there is frequently quite severe itching and burning. According to Crocker, a certain proportion of the cases begins with one or two patches, "primary plaques," which remain alone for weeks or months, or even years, before new ones appear. It is not uncommon for the disease to consist of a few insignificant patches, usually situated upon the points of the elbow, for many years, then, without any evident reason, a sudden exacerbation occurs, new lesions appear rapidly and abundantly, until a considerable part of the cutaneous surface is affected.

The disease exhibits a marked predilection for the extensor surfaces of the extremities, being very commonly found on the points of the elbows and over the anterior surface of the knees; but these regions may escape entirely, even in extensive cases. The scalp is also a favorite region, particularly on the forehead at the margin of the hair and behind the ears. Indeed, the disease may be confined to this region, although a careful search in the cases in which it seems to be the only part affected will often reveal one or two insignificant papules elsewhere, usually upon the elbows.

There is frequently a quite remarkable symmetry in the arrangement of the eruption. The patches occupy practically the same regions and have, in a general way, the same shape on both sides of the body (Fig. 24). Quite exceptionally it may be unilateral or limited to a single region. The palms and soles are not often affected, although, according to Neilsen, these regions are more frequently affected than is commonly supposed. In these localities it seldom presents the circumscribed patches seen in other parts, but occurs as a diffuse thickening of the horny layer, or as small scaly elevations. The face is quite often exempt, even in extensive cases, and when attacked the eruption is usually less marked than elsewhere, the patches being ill-defined and only slightly scaly.

The nails are occasionally involved, usually along with the skin, but the disease may be limited to these, at least for a time. They become thickened, brittle, lustreless, and deformed, and beneath them is an accumulation of dirty white scales. Neilsen asserts that psoriasis

never attacks the nails alone and never begins in these; but this is certainly an error, since we have had a case under our own observation in which the nails were the only part attacked for a period of some months.

The amount of scaling is likewise variable. While in most cases it is abundant, it may, on the other hand, be quite scanty; in the scalp it may amount to no more than a well-marked dandruff, although usually quite thick in this region. Exceptionally the scales may form thick, oyster-shell-like, adherent crusts (psoriasis rupioides, psoriasis ostreacea).

In certain cases not very uncommon the eruption presents some of the features of an eczema—the scaling is scanty, the patches are not well circumscribed, and there is more or less severe itching—so that it may be difficult to decide whether one has to do with a psoriatic eczema or an eczematoid psoriasis.

In certain regions, as, for example, the scrotum, the inflammatory symptoms are unusually pronounced. There is frequently considerable swelling, with pain and tenderness, occasionally fissuring, with more or less moisture.

In those the subjects of psoriasis irritation, such as may result from the application of a mustard plaster, or slight traumatism, such as a scratch, may be followed by a psoriatic eruption in the irritated or wounded region. In all probability, some of the cases of psoriasis which have been reported as following vaccination have been of this sort. Former sites of the eruption are much more likely to be affected in recurrences than other parts of the skin.

In the great majority of cases, when the eruption disappears no trace of its existence is left, but not uncommonly a faint discoloration may remain for a short time, or, exceptionally, a decided pigmentation may follow, this last being especially apt to occur in those who have taken large doses of arsenic for some time, but not exclusively in these. In rare cases loss of pigment (leucoderma) may follow at the site of the patches, and this leucoderma may be permanent (Hallopeau).

In a small number of cases, which is gradually increasing, epithelioma has occurred at the site of circumscribed keratoses, but this complication is to be regarded as the result of arsenical treatment rather than as a sequel of the psoriasis. Wart-like growths have been observed in a few instances at the site of patches, and superficial scarring has been noted in a small number of cases (*vid.* p. 98).

Etiology.—The direct cause of psoriasis is unknown. It is slightly more frequent in men than in women, the proportion of the sexes being three of the former to two of the latter. The great majority of cases begin between the ages of ten and forty, and almost one-half before fifteen. It is uncommon before ten years of age, and decidedly rare in infancy, although Rille has reported a case which began on the sixth day, and Kaposi one at eight months. It almost never ap-

pears for the first time after fifty, but Crocker saw it begin at eighty-one and Neilsen at eighty-five. It is uncommon in dark-skinned races and rare in the full-blooded negro.

Opinions vary greatly as to the possible influence of heredity in predisposing to the affection, and these opinions vary all the way from ascribing the chief rôle in its production to inheritance to denying its influence altogether. Most authors are agreed, however, that the malady is never directly transmitted in this manner. Crocker was

Fig. 24*a*.—Psoriasis.

quite certain that a proclivity to the affection was inherited, and the author has at least once seen it occur in three generations in the male line. Neilsen very pertinently remarks, however, that the occurrence of the affection in several members of the same family can just as well be explained by contagion as by heredity.

The affection apparently has no relationship to any definite constitutional condition; it occurs in those who are apparently in robust health as well as in the debilitated. It has been attributed to nervous

disturbance and nervous shock, and gout and rheumatism have long been regarded as having an etiological relationship to it, as to many other skin affections, and with just as little foundation. In my opinion, there is no evidence worth the name that these affections exercise the slightest influence in producing psoriasis. The French have especially called attention to its occasional association with chronic arthritis, especially of the arthritis deformans type, and have made a special variety of these cases (psoriasis arthritica), but the evidence for a causal relationship between the joint trouble and the cutaneous affection is far from sufficient to prove it. It has been noted, however, that the cases of psoriasis associated with chronic arthritis are apt to be unusually severe (psoriasis inveterata) and to show a more or less marked tendency to terminate in a dermatitis exfoliativa.

As has already been noted, slight mechanical injuries, such as abrasions or scratches, or the application of local irritants, may be followed in psoriatic subjects by eruptive lesions at the site of injury or irritation, especially if the disease is advancing. Köbner was able to produce eruptive designs by superficially scratching the skin of individuals with psoriasis.

A number of cases have been observed to follow vaccination, the eruption beginning at the point of inoculation and spreading to other parts of the body. Whether these are to be classified with the cases in which a local irritation simply serves to call out the eruption in a subject already predisposed, or whether they are to be considered as a real transference of the disease, cannot yet be definitely determined, although the weight of opinion is in favor of the former view.

Under ordinary conditions psoriasis is not contagious, although the view that it is due to some as yet unknown organism has many supporters. Numerous attempts to transfer it by inoculation have been made, in most cases with entirely negative results; but Destot apparently succeeded in transmitting the malady to himself from an infant with vaccinal psoriasis. A few examples of supposed contagion have been reported. Unna, for example, observed three children who were supposed to have contracted the disease from a nurse with psoriasis, in whose care they were. The number of such cases, however, is very small, much too small to base any trustworthy conclusions upon.

Pathology.—There are many theories as to the nature and pathogenesis of psoriasis, and all of them, or most of them, have, as a matter of course, something in their favor, but each and every one is as yet nothing but a theory. The chief views as to its nature are: First, that it is due to vasomotor or trophoneurotic disturbance; second, that it is an infection; and, third, that it is a toxæmia, the result of some metabolic disturbance. The author is much inclined to the view that it is a dermatomycosis, an infection of the skin. While none of the organisms which have been reported by various investigators from time to time as the causative agent, beginning with the "epidermophyton" of Lang, have been able to stand the test of subsequent investi-

gation, yet the apparent success of one experimental inoculation, the slowly growing number of cases in which vaccination seems to have been the starting-point of the eruption, and the scattered cases of apparent contagion from ordinary intercourse, cannot be disregarded in a consideration of the causes of the disease. The manner in which the eruption spreads, extending at the border and often undergoing involution in the centre of the patch; the disappearance of the spread-

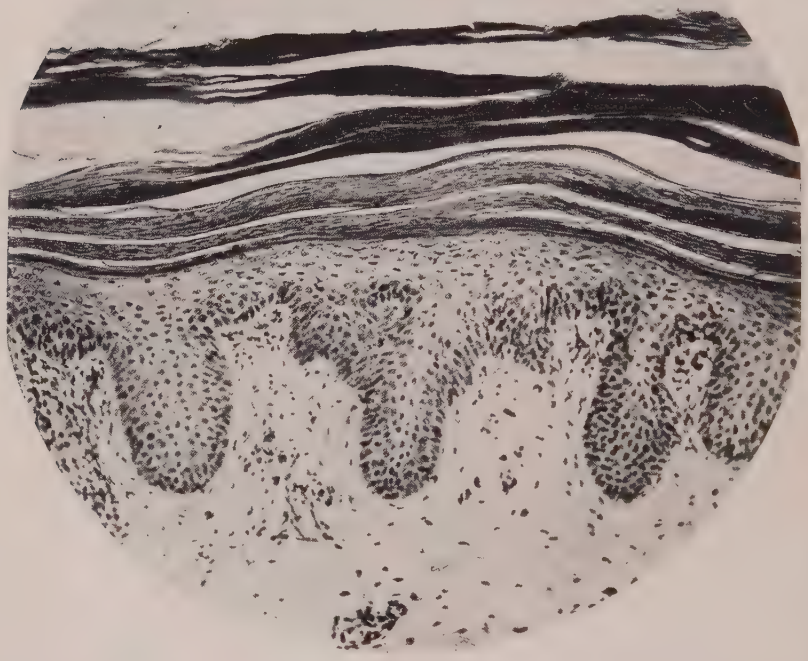


FIG. 25.—Psoriasis (recent papule). Note increased thickness of the horny layer of the epidermis and its arrangement in lamellæ with retention of nuclei in the lower layers. The rete mucosum is widened and there is a moderate exudate of lymphoid cells in the papillæ of the corium most noticeable at left of section.

ing rings at the point of contact, as if a temporary immunity had been created by the previous existence of the eruption; the well-known tendency of the affection to recur at the site of previous lesions; and, lastly, the fact that the most efficacious local remedies are, as a rule, parasiticide, are facts most readily explained by the theory of infection.

Pathological alterations occur in both the epidermis and the corium, but there is a difference of opinion as to where these changes begin—that is, whether the disease is primarily an affection of the epidermis or of the papillary layer of the corium (Fig. 25).

There is a considerable proliferation of the cells of the rete (acanthosis), occurring chiefly in the interpapillary prolongations, the layer of rete cells over the congested papillæ being comparatively thin, so that punctate bleeding from the papillary vascular loops readily occurs when the scales are scratched off. Cornification of the upper layers takes place in an incomplete manner; the cells retain their nuclei, are somewhat moist, so that they adhere in layers, between which are small, round, and linear collections of leucocytes (parakeratosis). The silvery-white color of the scales is due to the collection of air between the lamellæ. Owing to the interference with the process of cornification, keratohyalin is no longer formed, and the granular layer disappears in consequence.

The papillæ of the corium are enlarged, chiefly in the direction of their length, and their vessels are dilated, more particularly the venous capillaries. About the vessels, the hair follicles, and the sweat-glands there is a fairly abundant round-cell exudate, consisting of mononuclear and polymorphonuclear leucocytes, with a slight increase in the number of connective-tissue cells. The amount of these changes is largely dependent upon the age of the lesion, being most marked in the older papules.

Schamberg, Kolmer, Ringer, and Raiziss, in a study of the metabolism of psoriatic patients, found a notable disturbance of protein metabolism, as shown by an enormous retention of nitrogen, but their findings still await confirmation by other investigators. They attribute great importance to this nitrogen retention in the causation of the disease.

Diagnosis.—The invariably dry character of the eruption; the abundant mica-like scales; the almost invariably sharp circumscription of the patches; its predilection for the extensor surfaces, and frequently symmetrical distribution, are features so characteristic of the malady that the diagnosis is usually made without difficulty even by those with limited experience.

The diseases with which it is most apt to be confounded are squamous eczema, seborrhœa, especially of the scalp, lichen planus, ringworm, pityriasis rosea, and the squamous syphilodermata.

Psoriasis, as has already been pointed out, is invariably dry from the beginning to the end of its course, while in eczema there is frequently more or less discharge, or a history of its occurrence, at some time or other. The scale of psoriasis is laminated and composed entirely of horny epithelium, while the scale of eczema is frequently bran-like, or a mixture of crust and scale—that is, a mixture of epithelial scales and dried discharge. The patches of psoriasis are sharply marginate, while those of eczema commonly have no well-defined border, but merge insensibly with the healthy skin. Psoriasis attacks by preference the extensor surface of the extremities, while eczema shows no such preference. In psoriasis severe itching is exceptional; in eczema it is the rule. While the differential diagnosis between

psoriasis and scaly eczema may usually be made without much difficulty, the reverse is true when the latter affects the elbows or knees, as it occasionally does; and the distinction between the two can be safely made only by a careful examination of the entire cutaneous surface, and especially of the sites of predilection of the former.

Psoriasis and seborrhœa occurring upon the scalp may resemble each other quite closely, and are frequently confounded; indeed, no other error of diagnosis is quite so common. Psoriasis in this region, as elsewhere, occurs in circumscribed patches covered by dry, brittle scales, beneath which the skin is more or less red, and in the great majority of cases evidences of the disease exist elsewhere. In seborrhœa of the scalp the area affected is not sharply delimited, the scales are fatty or greasy, and the scalp beneath them is either of a normal color or paler than in health. In seborrhœic eczema of the scalp or seborrhœic dermatitis the scales are less abundant than in psoriasis; there is usually more or less moisture beneath them, and the disease of the scalp is apt to coexist with the same affection in the eyebrows and other hairy regions.

Psoriasis and lichen planus resemble each other only when the latter occurs in patches, but the distinction between the two is usually quite easy, since the flat-topped, angular papules characteristic of the latter may always be found about the border of the patch or at some distance from it. The papules of psoriasis are red, while those of lichen are usually violaceous, and the amount of infiltration in a patch of lichen is much greater than in a patch of psoriasis. The discrete papules of lichen are usually without scales, and it is only when patches are formed that scaling becomes at all pronounced, while the earliest lesions of psoriasis show a distinct scale. The scale of the two diseases is quite different; that of psoriasis is laminated and resembles mica somewhat, while the scales of lichen planus are small, quite white, and somewhat scanty. The distribution of the two maladies is different, psoriasis affecting the extensor surfaces, lichen the flexor surface of the extremities.

When the patches of psoriasis are ring-shaped and few in number, they are sometimes mistaken by the inexperienced for ringworm or tinea circinata, but in the former the scaling is quite abundant and the extension of the rings much slower than in the latter. No fungus can be detected in the scales of psoriasis, while in those of ringworm the spores and mycelia of the trichophyton fungus may always be quite readily demonstrated.

A superficial resemblance may exist between mild cases of psoriasis and extensive cases of pityriasis rosea, but the latter is an acute affection, running a course of two to three weeks, while the former is a chronic disease, lasting often for years. Scaling in the latter is usually quite insignificant, altogether unlike the laminated scales of the former.

Psoriasis with small lesions, the so-called guttate psoriasis, and the

papulosquamous syphiloderm of the secondary stage, may occasionally resemble one another very closely. In psoriasis the eruption is a uniform one, the lesions are all scaly papules which vary only in size; in the papulosquamous syphiloderm there are sure to be found papules without scales, and here and there a pustule covered with a crust. Psoriasis affects by preference the extensor surfaces and usually spares the face or affects it but slightly. Syphilis affects all parts alike, occurring quite frequently in the face, and characteristically on the palms and soles, regions which psoriasis attacks only infrequently. The syphilitic eruption is usually accompanied by a general adenopathy, and lesions upon the mucous membranes of the lips, tongue, and cheeks are often present, together with moist papules (condylomata) at the verge of the anus and on the scrotum. The scaly lesions of late syphilis often occur upon the palms and soles, regions which, as already noted, are infrequently attacked by psoriasis.

Prognosis.—The outlook as to a complete and radical cure is unfavorable, although there are few cases of the disease in which the eruption cannot be made to disappear for a longer or shorter time by judicious treatment. Relapses occur, however, in the larger proportion of cases at varying intervals, although it occasionally happens that a period of years may elapse during which there is no trace of the disease.

Treatment.—Both internal and external remedies are employed in the treatment of psoriasis, and a judicious combination of both usually gives the best results, although there are cases in which one or the other form of treatment may be successfully employed alone. On general principles the patient's general health should be carefully looked after, but in many cases, if not in most, the patient's general condition affords no indication for systemic treatment. In a general way, everything which tends to lower the patient's vitality should be avoided. Although it is the custom to regulate the patient's diet, the author does not believe that any particular form of diet influences the disease, either favorably or unfavorably. Quite recently it has been asserted (Schamberg) that under a low protein diet the eruption tends to disappear more or less completely. It is true that some individuals, while on such a diet, apparently improve, but the improvement is usually very brief, and the eruption promptly reappears after a return to the ordinary diet, and in a considerable proportion of cases such a diet exerts no apparent effect upon the disease. The inordinate use of alcohol is undoubtedly bad, and it should be interdicted in most cases.

Among the systemic remedies employed in the treatment of psoriasis, arsenic easily takes the first place, but it is not to be used indiscriminately nor by any means in every case, since it is capable of doing quite as much harm as good—indeed, more when used injudiciously. The cases in which it acts best are those in which the eruption is either stationary or extending very slowly, with no signs of

acute inflammation and little or no itching. It should not be employed when the eruption is spreading rapidly, is bright red, with rather fine scaling, and marked itching. In such cases it almost invariably makes the patient's condition much more uncomfortable. Not uncommonly, even in chronic cases, its administration is followed by a marked increase in itching, and exceptionally this increased itching is so severe as to make the continuance of the remedy almost impossible for a time. There are many preparations of arsenic, and special therapeutic properties are claimed for some of the recently introduced organic arsenical compounds, but there is little or no evidence that the new preparations are any more effective therapeutically than the old ones, although some of them, such as the cacodylate of soda, are especially adapted to hypodermatic use. In order to obtain satisfactory results from arsenic in psoriasis, it should be given in doses as large as the patient can comfortably and safely take. Small doses are of little or no use. Of course, the patient should be under constant and careful supervision while taking the remedy. It should always be given immediately after meals, and the liquid preparations should be taken largely diluted with water, or, better, with milk, in order to avoid as much as possible its local irritant effects upon the gastric mucosa. Arsenic trioxide or arsenious acid may be given in doses of one-twentieth to one twenty-fifth grain (0.002 to 0.003) three times a day, and my own experience is much in favor of giving it in combination with black pepper in the shape of the so-called Asiatic pill.

℞

Pulv. piper. nig. .....gr. i. (0.05)
Pulv. arsenic. trioxid. .....gr. $^1/_{20}$ (0.003)

M.
Sig. To be taken three times a day.

This seems to be more active therapeutically than the arsenic trioxide alone, and better tolerated by the stomach. Fowler's solution (liquor potassii arsenitis) is one of the most commonly employed forms of arsenic, and may be given in doses of five to ten drops in half a tumblerful of water after meals. The author much prefers, however, the liquor sodii arsenatis given in the same dose, since it is tasteless and odorless and is apparently somewhat less irritating to the stomach than the potash salt. It may be given conveniently and effectively in a glass of water taken with the meals, or in milk. If the patient is anæmic, either one of the above solutions may be advantageously combined with the wine of the citrate of iron, giving one or two teaspoonfuls of the latter as a dose. Recently the cacodylate of soda, which contains as much as fifty-five per cent. of arsenic, has been recommended as an especially effective arsenical preparation. It may be given in doses of one-half to three-quarters of a grain (0.03 to 0.05) three times a day, and even larger doses may be given without producing symptoms of arsenical poisoning. When taken by the mouth

it imparts an intensely disagreeable odor of garlic to the breath, extremely unpleasant for those who come in contact with the patient. A large experience with this preparation has convinced me that it possesses no advantages over other preparations of arsenic except that it is quite soluble in water, making an unirritating solution particularly well adapted to hypodermatic administration. Atoxyl is another of the more recently introduced arsenical preparations which may be administered hypodermatically, but it is much too dangerous for ordinary use. Certain untoward effects are apt to be produced by the prolonged use of arsenic in large doses, such as pigmentation of the skin and the formation of keratoses, particularly in the palms and on the soles, and, since these latter are occasionally followed by epithelioma, their production is to be carefully avoided.

Salicin and the salicylates, remedies which were first recommended by Crocker in the treatment of psoriasis, are of considerable value, but they must be given in fairly large doses in order to obtain the best effect. Salicin is preferable to the salicylates because it rarely, if ever, disturbs the stomach and seems to be quite as effective as the latter therapeutically. It may be given in doses of from ten to fifteen grains (0.65 to 1) three or four times a day, and may be increased to twenty grains (1.50) without any untoward effect. It seems to be especially useful in those cases in which arsenic is contraindicated—cases in which the eruption is rapidly extending and in which there is considerable itching. Salicylate of soda may be given in the same doses, preferably in carbonated water, to avoid upsetting the stomach. Unlike salicin, it is at times quite depressing, in addition to its nauseating effect.

Iodide of potassium in large doses, as advocated by Haslund, is a remedy which is occasionally of service, but it should be given in large doses, not less than a drachm (4.0) a day, and should not be given to patients with cardiac or renal insufficiency.

The alkalies, such as potassium citrate or acetate, or the liquor potassæ in full doses, largely diluted with water, are sometimes of service, especially in subacute cases with a spreading eruption occurring in robust individuals, but these should not be continued for any considerable period.

Other remedies which are occasionally useful, but much more uncertain in their effects than the foregoing, are phenol in doses of one grain (0.06) three times a day, carefully increased to three or four grains (0.20 to 0.25) three times a day; turpentine, ten to thirty minims three times a day, recommended by Crocker in hyperæmic cases; wine of antimony in ten-drop doses three times a day in markedly inflammatory cases occurring in robust subjects; and, lastly, thyroid gland (Bramwell). This last sometimes proves effective in cases which have resisted other forms of treatment, but it should be given with care, and upon the appearance of symptoms of hyperthyroidism, such as vertigo, increased rapidity of pulse, and restlessness, it should be suspended.

The local treatment of psoriasis is no less important than the systemic treatment, and requires even more skill and judgment. It is quite possible to remove the eruption by external treatment alone, and in cases in which it is not very extensive internal treatment may be dispensed with, if there are any contra-indications to its employment. The first step in the local treatment should be the thorough removal of the scales. When they are scanty, simple inunction with some bland fatty substance, such as petrolatum, benzoated lard, olive oil, or oil of sweet almond, may be sufficient to remove them. In cases in which the scales are abundant more active measures are necessary, such as prolonged immersion in a warm alkaline bath and the use of the tincture of green soap. If the scales are unusually thick and adherent, the wet pack may be employed. In very extensive cases rubber clothing or, when an extremity is involved, a rubber bandage may be used; these, by retaining perspiration, produce thorough maceration of the epidermic scales, so that they may be completely removed.

In mild and recent cases the use of baths, followed by emollient ointments, may be sufficient to remove the eruption when employed in conjunction with internal treatment, but in most cases more active local treatment is required.

One of the most efficient of all the local remedies is chrysarobin, which may be used as an ointment, paste, or varnish, the first being the most efficacious. Certain disadvantages, however, attend its use, which restrict to some extent its employment. The first and most important of these is its tendency to occasionally produce a severe dermatitis, which may extend far beyond the point of its application. When applied to the face and scalp, a severe conjunctivitis may result, and for this reason it should not be used at all in the former region and only with caution in the latter. A second disadvantage is the staining of the skin, hair, nails, and clothing which it causes, the last being stained an indelible mahogany red. The most efficient manner of applying it is as an ointment, containing from two to twelve per cent. This should be thoroughly rubbed into the patches, first freed of scales, once a day. Made up in a paste as in the following, staining is reduced to a minimum:

℞

Chrysarobini .....gr. xx–xxx (1.5–2)
Pulv. amyli,
Pulv. zinci oxidi .....āā ʒij (8)
Petrolati .....ℨss (16)

M.
Sig. Apply once a day.

This paste is not quite as effective as an ointment, but it is much more agreeable to use, greasing and staining the clothing much less. The staining may be quite prevented by dissolving the chrysarobin in liquor gutta-percha and painting it on the patches, first thoroughly freed of scales, with a flat brush. It may be mixed with flexible collo-

dion and applied in the same manner; or it may be mixed with chloroform, thirty grains (2.0) to the ounce (32.0), and painted over the patches, which are then covered with collodion after the chloroform has evaporated. The strength of these ointments, pastes, and solutions must depend upon the degree of inflammation and the amount of infiltration present. If the inflammation is at all acute, with much itching or burning, chrysarobin should not be used at all, or at least not until these have measurably subsided. In sluggish, long-standing cases, with considerable thickening, the addition of two to three per cent. of salicylic acid adds materially to the effectiveness of the chrysarobin applications. Should a dermatitis be produced, the use of the remedy should be suspended until this subsides.

Tar is an old and valuable local remedy in the treatment of psoriasis. The ordinary tar ointment of the Pharmacopœia, unguentum picis liquidæ, is effective, but dirty and disagreeable, and may advantageously be replaced by other tarry preparations, such as the oil of cade (oleum cadini) or oil of birch (oleum rusci). These may be used combined with some ointment-base, such as lanolin or benzoated lard, in the proportion of one or two drachms to the ounce (4–8 to 32), and should be thoroughly rubbed in once a day, or they may be mixed with some fluid fat, such as fluid cosmoline, oil of sweet almond, or olive oil, and thoroughly rubbed into the affected areas with a flannel cloth or stiff brush. In inveterate cases with much infiltration the pure oil of cade or oil of birch may be employed in this manner. The curative effect of the tarry preparations is materially enhanced by following their application by prolonged immersion in a warm alkaline bath. They are not suited to inflammatory cases, and in every case it is well to use the weaker ointments at first until the patient's tolerance of the remedy is ascertained. Occasionally toxic symptoms result from absorption, such as nausea, vomiting, diarrhœa, strangury, and blackened urine; the appearance of these symptoms should lead to the immediate suspension of the treatment. In recent years attempts have been made to obtain a tarry preparation which should have all the therapeutic value of tar without its disagreeable qualities, but so far these attempts have not met with much success. Anthrasol, a light-yellow, oily preparation made from tar, with a slight but not disagreeable tarry odor, while useful and more agreeable, is by no means as effective as the oil of cade or the oil of birch. Coal-tar may be employed instead of the preparations of wood tar, but is by no means the equivalent of the latter. The most convenient manner of using it is in the shape of a mixture of one part of coal-tar to six or eight of tincture of soap bark, known as the *liquor carbonis detergens;* this should not be used in full strength—at least, not at first—but should be diluted with three or four parts of water, or, better, lime water, and should be thoroughly rubbed into the patches twice a day.

A very useful and cleanly remedy is an ointment of ammoniated

mercury of the strength of from five to ten per cent., or stronger; it is colorless and odorless and much more agreeable to use, especially on uncovered parts, than the preparations of tar and chrysarobin. Owing to the danger of producing mercurialism through absorption, its use should be limited to comparatively small areas. It is an especially useful local remedy in psoriasis of the scalp, owing to its freedom from odor and stain.

Pyrogallol, introduced as a remedy for psoriasis by Jarisch, may be used as an ointment of ten per cent. strength, but it is a dangerous remedy if applied to large areas, since enough of the drug may be absorbed to cause serious toxic symptoms, or even death. Betanaphthol and thymol, the former recommended by Kaposi, the latter first proposed by Crocker, are occasionally useful, but decidedly inferior to such remedies as chrysarobin or tar, although more agreeable to use. They are best applied in an ointment of from five to ten per cent. strength.

The X-ray is a very effective and cleanly local remedy, frequently causing the rapid disappearance of the patches, but it is no more curative than other local or internal treatment, and relapses occur with the same facility as after other remedies. It should be employed with caution; the exposures should be short and not too frequently repeated; and it should not be used in psoriasis of the scalp, as permanent alopecia may be produced. Exposure to sunlight and to the electric arc-light likewise exerts a favorable effect upon the eruption.

PARAPSORIASIS

Synonyms.—Parakeratosis variegata (Unna); Lichen variegatus (Crocker); Psoriasiform and lichenoid exanthem (Neisser); Dermatitis psoriasiformis nodularis (Jadassohn); Erythrodermie pityriasique en plaques disseminées, Parapsoriasis en plaques (Brocq); Resistant maculo-papular scaly erythrodermias (Fox and MacLeod).

Definition.—A rare and extremely chronic and rebellious inflammatory affection distinguished by an eruption composed of minute scaly papules and scaly erythematous patches situated, for the most part, upon the trunk.

Attention was first called to this rare affection by Unna, who, in conjunction with Santi and Pollitzer, first described several cases in 1890, under the name of parakeratosis variegata. Other cases bearing more or less resemblance to Unna's cases have since been described under a variety of names by Jadassohn, Juliusberg, Neisser, Colcott Fox and MacLeod, J. C. White, and Brocq. While all these cases have certain features in common, they also present decided differences in many of their clinical symptoms, and while regarded by most authorities at present as closely related, it is still uncertain whether they are actually only variants of the same disease or distinct affections. Fox and MacLeod have proposed for the whole group the provisional title "Resistant maculo-papular Scaly Erythro-

dermias," including under it the erythrodermie pityriasique en plaques disseminées, parapsoriasis en plaques, of Brocq; the dermatitis psoriasiformis nodularis of Jadassohn; the pityriasis lichenoides of Juliusberg; the lichenoid psoriasiform exanthem of Neisser; and Unna's parakeratosis variegata.

Symptoms.—As may be inferred from the variety of names under which the cases have been reported, the symptoms present considerable variation, although certain of them are common to the whole group. Following Brocq, the cases may be divided into three groups: First, those which resemble in some degree psoriasis, characterized by small, flat, red or brownish-red, slightly scaly papules and macules scattered over the trunk and extremities, slowly spreading to new regions until a large part of the skin is involved; second, those which bear some resemblance to lichen, distinguished by an eruption consisting of very small, slightly scaly, red or yellowish-red papules which in time form irregular or serpentine patches, which inclose areas of sound skin, producing a characteristic retiform appearance. When fully developed the eruption may cover a large part of the trunk and extremities. The skin is somewhat thickened and varies in color in different localities from yellowish-red to a pale violaceous color, producing a variegated appearance (parakeratosis variegata, lichen variegatus). The third form is characterized by variously sized red or brownish-red, non-elevated patches covered with a fine scanty scale, which begin as small red spots or patches one or two centimetres in diameter and steadily enlarge and coalesce. On the back they occasionally form linear patches an inch or an inch and a half wide, which follow the direction of the ribs, producing a streaked appearance.

Occasionally intermediate cases are observed in which, in addition to the scaly erythematous areas above described, patches of very small scaly papules are present, such as are seen in cases of the second group.

In most of the cases reported the absence of itching has been emphasized, but a few exceptions have been noted. In a case of the third form in a neurasthenic man at present under the author's care, considerable itching is present at night.

Etiology and Pathology.—The immediate cause of the affection is altogether unknown. It is apparently decidedly more frequent in men than in women, and is, for the most part, a disease of adults, although Juliusberg saw a case in which it was said to have begun at seven years of age. The cases, however, are as yet far too few to permit any trustworthy conclusions to be drawn concerning the factors which predispose to it.

Brocq regards it as related, on the one hand, to psoriasis and the psoriasiform "seborrheids," and on the other to lichen planus.

The histological changes are indicative of an inflammatory process and are much the same in all forms, differing chiefly in degree. In the epidermis there is inter- and intra-cellular œdema of the prickle-

cell layer, with disturbances in keratinization leading to disappearance, wholly or in part, of the granular layer and retention of nuclei in the cells of the horny layer (parakeratosis).

The papillæ of the corium are œdematous, their vessels dilated and surrounded by a more or less abundant round-cell exudate.

Diagnosis.—The extremely chronic and rebellious character of the eruption, its steady spread, its peculiar yellowish-red or brownish-red and occasionally variegated color, and the absence of itching are characteristic features. It differs from psoriasis by the scantiness of the scales and their bran-like character, and by the absence of any partiality for the regions affected by the latter. It may be distinguished with difficulty from the erythrodermic stage of granuloma fungoides, and in at least one case was confounded with that affection.

Prognosis and Treatment.—As already observed, the affection is an eminently chronic one and extremely resistant to treatment. Brocq has observed benefit from the internal use of cacodylate of soda, and Engman and Mook from bichloride of mercury, but others have observed no benefit from any form of internal treatment.

Unna had some success with a strong ointment of pyrogallol, counteracting its toxic effects by the simultaneous administration of hydrochloric acid. Brocq regards this as the most useful local remedy, using a ten per cent. ointment with the addition of two and one-half per cent. of salicylic acid. When using such a dangerous local remedy as pyrogallol, the patient should be under constant and careful supervision lest serious toxic effects be produced.

PITYRIASIS ROSEA

Synonyms.—Pityriasis maculata et circinata; Pityriasis rosé (Gibert); Herpes tonsurans maculosus (Hebra).

Definition.—An acute mildly inflammatory disease characterized by an eruption composed of small, red, only slightly elevated papules and round, annular and elliptical, slightly scaly macules.

Symptoms.—This affection was first described by Gibert, in 1860, who gave it the name *pityriasis rosé*, and later by Bazin, who gave it another name, *pityriasis maculata et circinata*, and by Hardy, Duhring Behrend, and others.

The eruption is in most cases confined to the trunk, although it is not very uncommon on the neck and extremities, but is very rare on the face. It begins as small pink or red papules and round or oval patches which continue to enlarge for a day or two and then remain stationary. The majority of the macules undergo a partial involution in the centre after a short time, which transforms them into rings or ellipses with a yellowish centre covered with a thin, finely wrinkled scale and slightly elevated and finely scaly red borders. When fully developed the patches vary in size from that of a large pea to a coin and in numbers from a dozen or two to scores or hundreds, covering

the trunk, the upper arms, and upper thighs. In the cases with scanty eruption the lesions may all appear within two or three days, but in the more extensive cases they come out in crops for a week or longer. A certain number of the lesions remain papular throughout the attack, and exceptionally the papular character of the eruption as a whole is quite pronounced.

As was pointed out some years ago by Brocq and repeatedly confirmed since, the disease begins in a certain proportion of cases with a "primitive plaque," which usually appears upon the trunk, according to Brocq somewhere near the waist-line, and, after a period varying from two or three to ten days, new patches appear rather rapidly on various parts of the trunk. The interval between the appearance of this primitive plaque and the general eruption is occasionally quite prolonged. Moingeard observed a case in which it was six weeks, and the author has within a few months seen one in which it was seven weeks. The proportion of cases in which it occurs is still undetermined. Szaboky found it in 50 per cent. of 119 cases, while Graham Little saw it only nineteen times in 174. Since it is unattended by any annoying subjective symptoms which attract the patient's attention, and may occur on parts not easily seen, it probably is present in a much larger proportion of cases than these figures indicate.

The distribution and extent of the eruption vary considerably. In the majority of cases it is found in the clavicular regions and on the sides of the thorax. It is rather scanty, but may cover a great part of the trunk and extend to the upper arms and upper thighs. The forearms and legs are rarely affected, the face still less frequently, and the hands almost never. In rare cases it may be unilateral or limited to certain regions, such as the clavicular or the sides of the thorax.

In most cases some degree of itching is present and occasionally is very severe, causing the patient much distress. If irritating washes or salves have been applied, a decided dermatitis may be produced, accompanied by intense itching.

The eruption lasts from two to three weeks, the usual time, to six or eight, or even three or four months in exceptional instances.

With a widespread eruption slight elevation of temperature, with headache, may be present for a short time, but this is unusual. Under similar circumstances the cervical, axillary, and inguinal glands may be slightly enlarged (Crocker).

Second attacks may occur, but are decidedly rare, the author having seen but a single example (Fig. 26).

Etiology.—The disease is seen in the great majority of cases in children and young adults. It is rare in infancy and old age, but Crocker saw it as early as seven months and as late as seventy years. Although it is stated by some authors (Thibierge) that it is decidedly more frequent in women than in men, the author's own experience coincides with that of Szaboky, who found it much oftener in males than

in females. It is altogether likely, however, as the statistics of Crocker and Graham Little show, that sex affects its incidence very little, if at all. It is apparently somewhat more frequent in the cold than in the warm months.

In 1882 Vidal announced the discovery of a fungus in this malady

FIG. 26.—Pityriasis rosea.

consisting of extremely small spores of unequal size without mycelium, surrounding the epithelial cells, to which he gave the name *Microsporon anamœon* or *dispar*. This discovery was not confirmed by other investigators, but quite recently (1912) Du Bois has described a similar organism which he has found in the scales of the patches for which he proposes the name given by Vidal, *Microsporon dispar*. He attributes

the non-success of those who have looked for the organism to the fact that they have not removed the scale with sufficient care. Unless this is very carefully done, the spores are destroyed or lost. This discovery still awaits the confirmation of other investigators.

In a few instances it has been observed in two or more members of the same family, as husband and wife, mother and child, sister and brother (Hyde, Crocker, Fordyce, G. H. Fox), but these are still so few that they may just as well be attributed to coincidence as to contagion.

Pathology.—The nature of the disease is still undetermined. Hebra, Kaposi, and others of the Vienna school believed it a variety of ringworm, but as it has been demonstrated again and again that the trichophyton is not present in the scales of the patches, this opinion is hardly worth serious discussion. By a number of authorities it is regarded as a general infection analogous to the exanthemata, or to the toxic erythemata.

Notwithstanding the apparently superficial character of the macules, considerable histological changes are present in both the epidermis and the upper portion of the cutis. In the former there is a parakeratosis with parenchymatous œdema of the rete which causes a slight increase in its width. In the advanced stages of the eruption, microscopic vesicles are present beneath the horny layer. In the papillæ and subpapillary portion of the cutis the vessels and lymph-spaces are dilated and the former surrounded by a considerable exudation of cells, which, according to Unna, are almost wholly young connective-tissue cells, but which according to Hollman are largely leucocytes.

Diagnosis.—The eruption is in most cases quite characteristic in appearance, but is at times mistaken for seborrhœic dermatitis, ringworm, psoriasis, and, most frequently of all, for syphilis.

Seborrhœic dermatitis shows a decided preference for the scalp, face, and on the trunk, for the sternal and interscapular regions, the regions which pityriasis avoids altogether or shows no special preference for. The scales are greasy and may form crusts, while those of pityriasis rosea are dry and fine. Seborrhœic dermatitis is a chronic affection, pityriasis rosea an acute one.

In ringworm the patches are rarely very numerous, are situated, in most cases, upon the face and other uncovered parts, spread peripherally quite rapidly and sometimes extensively, and contain the spores and mycelia of the trichophyton.

In psoriasis the patches are decidedly red and infiltrated and are covered with a laminated mica-like scale much more abundant than the fine scale on the patches of pityriasis rosea. The former is a markedly chronic, the latter an acute, disease.

Although there is, in most cases, but little real resemblance between pityriasis rosea and syphilitic eruptions, the former is quite often mistaken for the latter. The color of pityriasis is a characteristic salmon-pink, that of the macular and papulo-squamous syphiloderm

red or brownish-red. The former never occurs on the palms and very rarely upon the face, regions commonly affected by syphilis. The former frequently itches more or less, the latter very rarely. The syphilitic eruption is accompanied by a general adenopathy, mucous patches in the mouth and about the anus, and other symptoms more or less characteristic.

Prognosis and Treatment.—In most cases it is a trivial affection, chiefly of importance from the point of view of diagnosis. It runs a course lasting from two or three weeks to a month or more, but exceptionally it may last several months. It is rarely accompanied by annoying symptoms and disappears without leaving any sequelæ.

Internal treatment is unnecessary and without effect upon its course, although Crocker was quite convinced that salicin hastened its involution. Nor is there any certainty that external treatment is any more efficacious, although this may be necessary for the relief of itching. Especial care should be taken to avoid the use of lotions or ointments which may irritate the skin, which seems to be more than usually irritable. If irritated, the itching may be extremely annoying; indeed, the only cases in the author's experience in which this symptom has been especially pronounced have been those which have been injudiciously treated locally. Lotions of phenol, one to two per cent., with two or three per cent. of glycerin, of resorcin, one per cent., of menthol and borax (*vid.* Eczema), may be employed when local treatment is indicated.

ECZEMA

Synonyms.—Salt rheum; tetter; Fr., eczéma; Ger., Ekzem, nässende Flechte, Salzfluss.

Definition.—Eczema is an inflammation of the skin, a dermatitis characterized by a variety of primary lesions, such as redness or erythema, papules, vesicles, and pustules, and secondary lesions, such as crusts, scales, fissures, and thickening of the skin. The eruption is usually a multiform one, several, indeed all, of the above-mentioned lesions being present at one time or another in the course of the disease, or simultaneously. Itching and burning, usually of a marked character, accompany the eruption, the former being almost never absent.

If we consider the frequency of its occurrence, the distress which it occasions its subjects, the difficulties which often surround its treatment, eczema is easily one of the most, if not the most, important of all the diseases of the skin. According to the statistics of the American Dermatological Association, no less than 30 per cent. of all diseases of the skin in North America belong in this category. No age nor station in life is exempt. Infancy and old age, the rich and poor alike, are its subjects. Much has been written in times past in a vain endeavor to show how eczema differs from an ordinary simple dermatitis, but, as was conclusively proven by Hebra, eczema is nothing more than a dermatitis, although not every dermatitis is an eczema. It

differs in no essential particular, neither as to its clinical features nor its histopathology, from the inflammation of the skin which may be artificially produced by many irritant substances locally applied. That eczema is nothing more than a dermatitis is conclusively shown by the fact that in the so-called trade eczemas a large and important class which are in every particular real eczemas, differing in no discoverable way from those of unknown origin, the affection is in the beginning an inflammation of the skin resulting from contact with some irritant substance, chemical or otherwise, which frequently runs an acute course, disappearing promptly at first with the withdrawal of the irritant, but which after repeated attacks or prolonged exposure no longer disappears, even when the cause is withdrawn, but continues indefinitely. The simple acute dermatitis has then become a chronic eczema. And while it is true that many individuals are much more prone to acquire eczema than others, exhibit an "eczematous" tendency, it is also most probably true that every individual may acquire the affection if the irritation of the skin is sufficiently prolonged or often enough repeated. Bateman's definition of eczema, "a non-contagious eruption, generally the effect of irritation, whether internally or externally applied, occasionally produced by a great variety of irritants," has had nothing of real importance added to it in a hundred years.

While all authors recognize an acute and a chronic form of the malady, yet eczema is practically a chronic affection, pursuing a course lasting months or years, during which there are frequent acute exacerbations. Indeed, the author is quite convinced that acute eczema would dwindle to small proportions if care were taken to exclude the action of local irritants in every case of acute inflammation of the skin presenting the symptoms of eczema. A large proportion of the cases of so-called acute recurrent eczema are, in fact, cases of acute dermatitis resulting from contact with some unsuspected or undiscovered irritant. There are, however, certain cases of acute inflammation of the skin, presenting the symptoms of eczema, in which such local cause can be excluded, and for which some unknown internal source must be accepted.

Symptoms.—The symptoms of eczema are those of inflammation, redness and some swelling, with or without papules, vesicles or pustules seated upon reddened areas, accompanied by subjective sensations of itching and burning, oftentimes of the most exaggerated character. The picture presented by the eruption is a constantly changing one—the erythema of to-day is succeeded by a vesicular eruption to-morrow, which, in turn, may be replaced by a red raw surface from which oozes a straw-colored viscid fluid which dries into thick yellow crusts. Very commonly, if the disease is at all extensive, several types of eruption may be present on various parts of the skin simultaneously. The face may present a diffuse redness with slight scaling, while the arms are covered with vesicles and the legs are moist, oozing and crusted, the

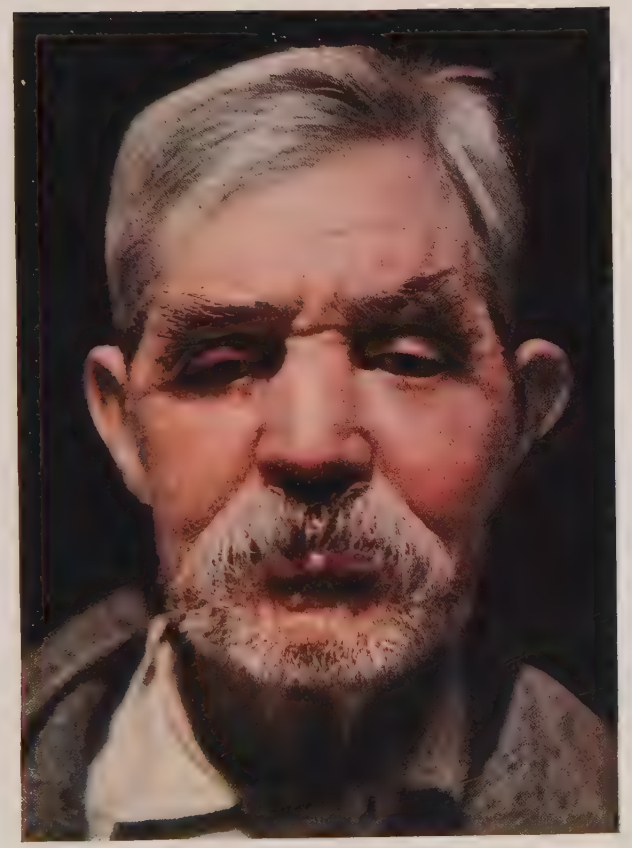
type of disease depending upon a great variety of circumstances, such as duration, locality, and age of the patient. Certain types are much less subject to variation in the eruption than others. Erythematous eczema frequently remains such throughout its course and the same is often true of the papular variety, while the vesicular type is apt to undergo transformation into one or the other of the secondary forms of the affection. It varies much in extent. It may consist of a few scattered patches limited to one or two regions, or may involve the entire cutaneous surface. Not very infrequently the mucous membranes adjoining the skin, such as the conjunctiva, the vaginal and rectal mucous membranes, share in the inflammation when the lids, the vulva and the anus are the seat of the eczema. In vulvar and anal eczemas implication of the adjoining mucous membranes usually gives rise to the most intolerable paroxysmal itching, and in the latter is sometimes accompanied by painful spasm of the sphincters. Constitutional symptoms are absent in the great majority of cases, although in acute attacks involving large areas there may be for the first few hours a slight rise in temperature, but this is altogether exceptional.

The course of the malady is a very variable one. As has already been mentioned, it may be acute, but in the vast majority of cases it is a chronic affection, often lasting many months and even years, varying greatly in its symptoms from day to day, often exhibiting acute exacerbations which transform it for the time into an acute inflammation, these exacerbations being the result of improper treatment, scratching, or, not infrequently, of some undiscoverable cause. In long-standing cases the skin is frequently greatly thickened, is dry and harsh from suppression of the functions of the sweat and sebaceous glands, and in consequence has lost its pliability and elasticity, so that fissuring readily occurs. These fissures are usually found in the normal lines of the skin, especially upon the palms and soles, or about the joints.

Furunculosis is an occasional complication and adds much to the patient's discomfort. In eczema of the lower extremities, particularly in middle-aged individuals, chronic leg ulcer is a frequent complication, especially when the eczema is associated with, or is the sequel of, varicose veins. In extensive and very chronic cases, swelling of the lymph-glands is not at all uncommon.

Four principal varieties of eczema are commonly recognized, named according to their primary lesions, eczema erythematosum or erythematous eczema, eczema papulosum or papular eczema, eczema vesiculosum or vesicular eczema, and eczema pustulosum or pustular eczema. A variable number of secondary forms are likewise recognized, such as eczema rubrum, eczema madidans or moist eczema, eczema squamosum or scaly eczema, eczema fissum, fissured eczema, eczema verrucosum or verrucous or wart-like eczema, eczema sclerosum or sclerous eczema. Although there is a great diversity in the clinical symptoms presented by these several varieties, it must not be supposed that they represent distinct diseases—they are nothing more

PLATE III



Erythematous eczema.

PLATE IV

Erythematous and vesicular eczema.

than variations of the same affection, one form readily and often passing into the other, and two or more forms frequently coexisting in the same individual.

ECZEMA ERYTHEMATOSUM

Erythematous eczema (Plate III) usually begins quite acutely with redness and swelling of the skin, the latter being especially marked when it attacks certain regions, such as the lids. The skin is a bright red to dull crimson or violaceous, and there is marked itching and burning. The area involved varies from a small coin-sized patch to the whole of a region, such as the face or an extremity, the borders of the inflamed area being ill-defined, fading insensibly into the surrounding normal skin. After a few days more or less scaling, usually of a furfuraceous or bran-like character, takes place, and the skin becomes harsh and dry. When the parts affected are opposed surfaces, as in the region of the genitalia or beneath the breasts in women, the horny layer of the epidermis is often lost through maceration and friction and the skin becomes bright red and moist or oozing (eczema intertrigo). After lasting a week or two the redness may slowly diminish, the itching and burning grow less and speedy recovery seem assured, when suddenly a new outbreak occurs, and all the symptoms, objective and subjective, reappear with their original severity. With such exacerbations and remissions, or sometimes with but little variation, the disease may continue for months, or indefinitely. In chronic cases the skin is dry, harsh, thick and scaly, there is a moderate amount of itching and often little or no tendency to spread beyond its original borders. Even after complete recovery relapses are quite common upon the slightest exposure to irritation of any kind, and frequently without any discoverable cause. Instead of continuing as an erythema it may be transformed into one of the other types of the affection, such as the vesicular, or irritated by rubbing and scratching or injudicious local treatment, the surface becomes moist, red and oozing, presenting the characters of an eczema rubrum. While less frequent than some other forms, the erythematous type is a fairly common one, and may occur on any portion of the skin, although it is most frequently seen upon the face, especially upon the forehead and the lids.

ECZEMA VESICULOSUM

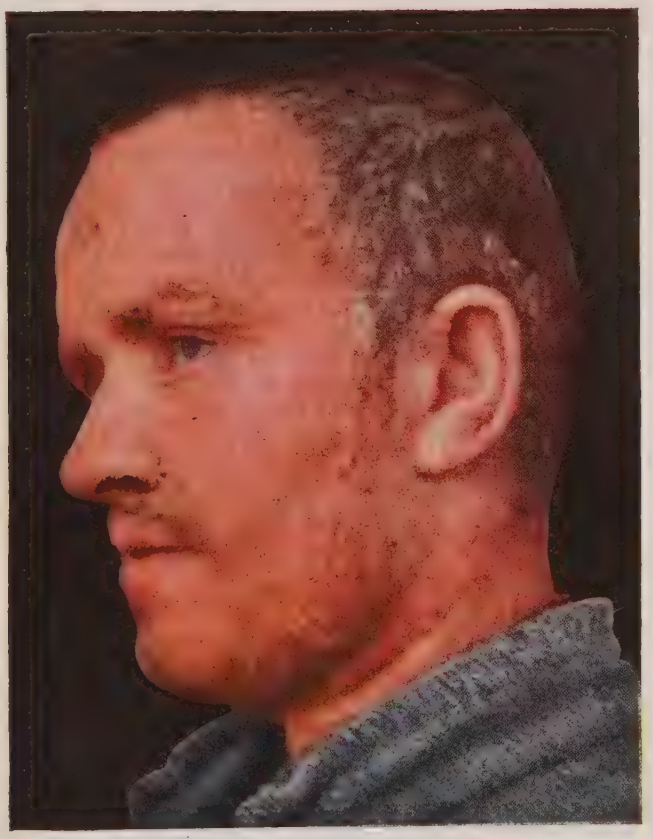
The commonest of the primary forms of eczema is the vesicular (Plate IV). It usually begins with sensations of heat and itching, followed speedily by redness of the skin with a moderate amount of swelling, and upon the reddened surface numerous pin-head to shot-sized elevations of the epidermis filled with transparent yellowish serum soon appear. The vesicles may be discrete, or, as is most frequently the case, they exist in such numbers that they are crowded together, forming variously sized irregular patches with poorly defined margins or upon the palms where the skin is thick they may coalesce to

form blebs. Owing to the thinness of their walls the vesicles are soon broken by the scratching and rubbing of the patient in his efforts to relieve the almost intolerable itching accompanying the eruption, or, when not broken by violence, they rupture spontaneously, giving exit to an abundance of yellowish, viscid serum which stains and stiffens the patient's linen and dries into yellow crusts. New vesicles constantly succeed the old and ruptured ones, or, as frequently happens, these no longer form, but the inflamed skin is transformed into a bright-red surface, denuded of its horny layer, covered with red points from which serum constantly oozes, sometimes in such quantity as to drip from dependent parts, the vesicular eczema thus passing into a secondary eczema rubrum. Oftentimes the most intense itching accompanies the eruption, occurring paroxysmally and driving the patient to the most violent scratching and rubbing in his efforts to obtain relief, which comes only after the vesicles have been broken, and is usually of very brief duration, recurring with all its original severity with each new crop. While the eruption may remain as it began, a purely vesicular one, it much oftener exhibits a considerable degree of multiformity, papules, vesicopapules and pustules coexisting with the vesicles. The extent of surface involved varies from a few small patches to an entire limb or the face, and while it shows no marked predilection for any region, it is seen most frequently upon the face, forearms, hands and feet. Upon the back of the hands it occasionally occurs in coin-sized circular, rather circumscribed patches which persist with great obstinacy. A common situation in infants is the face, a variety known to the older authors and the laity as "milk-crust."

ECZEMA PAPULOSUM

Papular eczema, the lichen simplex of the older writers, is characterized by an eruption of pin-head sized and larger red, acuminate or rounded papules, occurring discretely over considerable areas, or more frequently in ill-defined, variously sized patches in which the lesions are closely aggregated, producing more or less infiltration of the skin. Although the lesions often remain papular throughout the entire course of the disease, it is not unusual for a number of them to become vesicles. Owing to the usually severe itching which accompanies the eruption, many of the papules are covered with small blood crusts. The regions attacked are most commonly the flexor surfaces of the limbs, less frequently the trunk, and infrequently the face. This is one of the most persistent forms of eczema, always running a chronic course. In long-standing cases in which there are thickened patches of closely crowded papules, a certain amount of scaling usually occurs. Exceptionally, as a result of scratching and rubbing, these patches may become moist and oozing, and a secondary eczema rubrum arise. With the exceptions just noted, this variety of eczema is always dry. The papules usually last a considerable time and new lesions appear from time to

PLATE V



Eczema rubrum.

Eczema rubrum with abundant crusts.

Eczema rubrum with crusting.

PLATE VII

Eczema rubrum with chronic leg ulcer.

PLATE VIII

Squamous eczema.

Squamous and fissured eczema.

time. In certain cases not very rare, the papules are rather flat and somewhat glistening, resembling somewhat the papules of lichen planus, although they are rarely so well defined as the lesions of that affection, and lack the violaceous hue and the central umbilication so frequently present in lichen papules.

ECZEMA PUSTULOSUM

Pustular eczema, a much less common type than the vesicular, may begin as such, or, what is much more frequent, it commences with vesicles the contents of which become puriform later. In the latter event the eruption is a mixed one, vesicles and pustules coexisting. With the rupture of the pustules, either spontaneously or through rubbing and scratching, thick, yellowish, greenish or brownish crusts form, sometimes in great quantity, beneath which the skin is red and covered with an abundant seropurulent fluid. Subjective symptoms, such as itching and burning, while present, are rarely so severe as in the vesicular form. It is most commonly situated upon the scalp, less frequently in the face, and is seen especially in children, particularly in those who are ill-cared for and ill-nourished, or who show evidences of tuberculous infection, such as enlarged or inflamed lymphatic glands, so-called strumous subjects. When eczema attacks hairy regions other than the scalp, such as the beard and, in hairy individuals, the forearms and legs, it frequently assumes the pustular type, the pustules being situated about the hair follicles.

While the foregoing clinical types are often well defined and well differentiated from one another, it is very common to see a mixed type, in which several varieties of lesion coexist.

Sooner or later in most cases, the primary lesions disappear or are more or less modified, giving rise to secondary forms which differ clinically more or less distinctly from the primary forms.

Eczema rubrum is one of the commonest of these secondary forms (Plates V and VI). In this variety the skin is usually much thickened, bright red, with scanty scales or crusts, or moist and weeping (eczema madidans), and covered with thick crusts. Acute exacerbations occur with more or less frequency, accompanied by œdema, and abundant discharge of viscid serum, which after a time dries into thick yellow crusts. There are often much pain, itching and burning, which are always decidedly increased during these acute outbreaks. While eczema rubrum may occur on almost any portion of the skin, it is most often seen on the lower extremities of middle-aged and elderly people, in the flexures of the forearm, and, in children, behind the ears. It follows vesicular and pustular eczema much more frequently than any of the other varieties. Although it is not very uncommon after the erythematous form, it is quite unusual as a sequel of the papular variety. On the lower extremities it is often associated with the chronic leg ulcer (Plate VII).

Eczema squamosum, or scaly eczema (Plate VIII), occurs as ill-

defined, red and thickened patches, covered more or less thickly with whitish or yellowish scales which may be fine and bran-like and easily detached or of considerable size and more or less adherent. The scaly form is usually the sequel of the erythematous and papular varieties, or it may be the terminal stage of a vesicular eczema or an eczema rubrum. A common situation for this form is the scalp, particularly the occipital region and the nape of the neck, forming in the latter situation dull red or violaceous dry, thick patches covered with scanty bran-like scales, often accompanied by severe itching. Similar patches occur upon the extremities, particularly the lower ones, as the sequel of papular eczema. While desquamation may be a transient symptom in eczema, as when it is the terminal stage of an acute or subacute erythematous eczema, it is most commonly associated with very chronic forms with much thickening and a moderate degree of inflammation. A frequent locality for squamous eczema is the palms, where it occurs as irregular or rounded, red patches, covered with abundant adherent scales, and frequently attended by fissuring.

FIG. 27.—Eczema craquile.

Eczema Fissum.—In chronic eczema the flexibility of the skin is much impaired through diminution of the activity of the sweat and sebaceous glands and by infiltration with inflammatory exudate, so that it frequently splits, particularly about moving parts, such as the joints, and upon the palms and soles, forming fissures which are usually, but not always, in the normal furrows. These fissures are frequently quite deep, and when situated upon the palms and soles add greatly to the patient's discomfort, interfering seriously with the use of the hands, and making walking painful. Fissures also occur at the corners of the mouth and at the verge of the anus when eczema affects these regions.

Under the name of eczema craquile (Fig. 27) French authors have described an unusual form of fissured eczema in which the reddened skin is divided into numerous lozenge-shaped or irregularly polygonal areas by superficial cracks in the horny layer of the epidermis. This form often covers considerable areas, such as the trunk, or the extremities, and is accompanied by marked itching and burning.

Other less common secondary forms of eczema are eczema verrucosum and eczema sclerosum, both very chronic. In the former, usually situated upon the legs, the skin is dull red or violaceous, dry and thickened and covered with numerous slightly scaly wart-like elevations, often accompanied by severe itching. In the latter, which affects the palms and soles, less frequently the legs, the skin is slightly reddened, hard and inelastic and rather smooth or slightly desquamating. More or less itching usually accompanies it.

While the primary varieties of eczema may be either acute or chronic, the secondary ones are invariably of the latter form, but it must be remembered that in the chronic forms of the affection, whether they be primary or secondary, exacerbations are of frequent occurrence during which the disease, for purposes of treatment at least, is to be regarded as acute.

REGIONAL FORMS OF ECZEMA

While no portion of the skin is immune to eczema, certain regions are more likely to be the seat of the affection than others, and a number of regional varieties are recognized in which the clinical symptoms and the indications for treatment are more or less modified by the locality.

Eczema frequently attacks the scalp [Eczema capitis], particularly in children, and in the careless and uncleanly, and is apt to be of the pustular variety. The hair is often matted together with thick yellow, greenish or brownish crusts composed of dried serum, pus and blood mixed with sebaceous secretion, which frequently exhale a very disagreeable odor owing to decomposition. Pediculi are often present, which in many cases, especially in children, are the primary cause, especially when it is of the pustular form.

The face [Eczema faciri] is frequently the seat of eczema in both children and adults. In the former it is most commonly of the vesicular or pustular type, often accompanied by abundant crusting. Both are often succeeded by eczema rubrum. The eruption is usually situated upon the cheeks, but cases are not rare in which the entire face is covered with a mask-like crust. The symptoms are much more apt to be acute than in adults. In the latter the eruption is more commonly of the erythematous variety, and is usually situated upon the forehead and cheeks, although it may occupy the whole face. It is usually accompanied by marked thickening of the skin, which greatly accentuates the normal

furrows of the face, especially noticeable upon the forehead. While the skin is usually dry and slightly scaly, scanty oozing often occurs as the result of the friction to which the skin is subjected by the patient in his efforts to allay the itching, which is frequently intense. Eczema of the face is usually a very persistent variety in the adult.

Eczema of Lid (*Eczema Palpebrarum*).—Eczema may be confined to the lids, in which case it is almost always of the erythematous variety. The lids are dusky-red, thickened, slightly scaly, and the itching is usually quite severe. Not uncommonly, partly as the result of frequent rubbing, and partly by extension of the inflammation from the lids, there is more or less conjunctivitis. In children inflammation of the Meibomian glands, blepharitis, may accompany the eczema, small crusts occurring about the roots of the lashes, which in long-standing cases frequently fall out and may be permanently lost. Eczema of the lids in adults is a most obstinate and unusually annoying affection.

Eczema of the Ears (*Eczema Aurium*).—Eczema of the external ear is a fairly frequent topical variety, especially in children. In the latter the posterior surface of the auricle and the parts adjacent are often red and moist or crusted with fissuring in the furrow behind the ear and at the bottom of the lobe in the notch. In adults the external auditory meatus is occasionally affected. The entire auricle may be swollen and reddened and is occasionally subject to recurrent attacks accompanied by an eruption of vesicles and pustules, or, what is more common, the affection pursues a subacute or chronic course, the ear being thickened and dark red.

Eczema of the Beard (*Eczema Barbæ*).—The bearded region may be attacked by eczema to which it may be confined, or it may be a part of a more extensive disease. Whatever may be the particular form assumed in the beginning, sooner or later pustules appear which have their seat about the hair follicles. In addition to the vesicles and pustules, there is commonly a considerable degree of crusting with reddening and thickening of the skin. Burning and itching are usually prominent symptoms. In true eczema of the beard the eruption is rarely confined to the hairy region, but usually extends to the adjacent smooth parts or exists elsewhere.

Eczema of the Hands (*Eczema Manuum*).—No region of the skin is more frequently attacked by eczema than the hands. For obvious reasons they are the most usual site for all the forms of so-called trade eczema. Every variety of the malady may occur here, but the vesicular and squamous forms are the most frequent. The former occurs as a diffuse eruption extending over the backs of the hands, sides of the fingers, less frequently upon the palms, where the vesicles, owing to the thickness of the horny layer of the epidermis, do not tend to rupture as elsewhere, but appear as bluish-white grains embedded in the skin, or the eruption may occur in fairly well-defined patches of varying size,

with more or less thickening and crusting. Less frequently the eruption consists of coin-sized, circular, well-defined patches of discrete vesicles which rupture spontaneously and ooze clear viscid, abundant serum; this is an especially obstinate form of the disease, recurring with great persistency.

The squamous form is, in the great majority of cases, confined to the palms, where it occurs as diffuse areas without definite borders, or, exceptionally, as marginate scaly patches which are often quite thick and not infrequently fissured. In the cases attended by much thickening with fissuring, the patient is often incapacitated for performing any manual labor. In a considerable proportion of cases the entire palm as well as the palmar surface of the fingers is greatly thickened and fissured, interfering seriously with the use of the members.

Eczema of the Nails (*Eczema Unguium*).—Eczema may attack the nails. It may be limited to these structures and the parts immediately concerned in their growth, such as the nail-fold, the matrix and the nail-bed, or it may occur here as a part of a more extensive eruption. In eczema of the nails there is usually more or less interference with their nutrition, so that they are dry, more or less roughened and deformed, their surface often presenting small pits which give them a worm-eaten appearance. When the disease is part of an extensive and severe eczema the nails may be lost.

Eczema of the Breasts (*Eczema Mammarum*).—Eczema not infrequently attacks the nipple and areola of the breast, especially in nursing women, resulting from the irritation and frequent wetting of the parts by the nursling. The itching in some of these cases is most intense. Care must be taken not to confound an eczema of this region with a much graver malady known as Paget's disease which occurs in the same region and often presents a decidedly eczematoid appearance in its early stages.

Eczema of the Genitalia (*Eczema Genitalium*).—One of the most distressing of all the topical varieties of eczema is that which affects the external genitalia. In men the disease is most commonly seated upon the scrotum (Fig. 28), which is often enormously thickened and swollen, red, scaling, or moist and oozing. Not infrequently, the adjacent parts, such as the inner surface of the thighs, the perineum, and the under side of the shaft of the penis, share in the inflammation. In eczema of the vulva there is often great thickening, the parts are dull-red, dry and scaly, or moist and crusted. Quite commonly the mucous surfaces of the labia are likewise involved and the lower part of the vagina. The itching is often atrocious, coming on in paroxysms which completely over-master the patient, who, losing her self-control, violently tears the skin with her nails in her efforts to obtain relief, which usually follows only when free oozing takes place. Patients with eczema vulvæ are often reduced in time to mere neurasthenic wrecks by the loss of sleep

and nervous energy. Although frequently due to other causes, it is not uncommonly the result of a glycosuria, and an examination of the urine for sugar should never be omitted in such cases.

Eczema of the Anus (*Eczema Ani*).—Eczema is frequently confined to the anus, either beginning as such, or, what is quite common, having its origin in a pruritus which for a time presents no visible alteration of the surface. The disease is situated about the mucocutaneous border of the anus and on the opposed surfaces of the nates, or it may be confined to the former situation. The skin is red, excoriated, often moist and decidedly thickened, with frequent fissuring. Not uncommonly the inflammation extends within the verge of the anus, upon the mucous membrane. The itching is at times of the severest kind, frequently paroxysmal, compelling the patient to seek relief by scratching, quite regardless of time or place. When the inflammation extends well within the sphincter there may be paroxysms of violent tenesmus which exceptionally may necessitate division of the sphincter for its relief, as in a case under the author's observation some years ago. Itching is usually much worse at night, often interfering seriously with sleep.

FIG. 28.—Eczema rubrum, scrotum.

Etiology.—Eczema has no single specific cause. It is the result of a great variety of causes, direct and indirect. These are internal or

constitutional, and external or local, the former being almost without exception indirect or contributing causes, while the latter are frequently directly productive of the malady.

Our knowledge of the internal causes is, unfortunately, still most unsatisfactory. Indeed, it is yet largely a matter of hypothesis. While many, if not most, individuals suffer at one time or another from eczema, there is an enormous difference in the susceptibility of different individuals to the affection, but, in all probability, this difference is not so much one of kind as of degree. The cause of this difference we are absolutely unable to explain. In many instances the subjects of eczema are seemingly in perfect health, the most careful scrutiny failing to reveal any disturbance of function or disease of viscus. On the other hand, however, there is frequently disturbance of the gastro-intestinal tract, often the result of improper diet, especially in the eczemas of childhood. This may act as a contributing cause in one of two ways: First, and most commonly, by producing certain toxic substances in the intestinal canal, which, when absorbed and carried to the skin, act as irritants, or, secondly, and less frequently, by interfering with nutrition, and thus lowering the patient's powers of resistance generally. In all probability the importance of indigestion as a causative factor in eczema has been greatly overrated. There is altogether too much generalization on the subject and too little exact observation. The studies of Hall, in regard to the relationship of indigestion to eczema in infancy, have apparently shown that it is far from exerting the baneful influence commonly attributed to it; in a series of cases, sixty in number, it was shown that it had practically no influence at all. Moreover, many individuals suffer more or less from functional disorder of the gastro-intestinal tract the greater portion of their lives and never exhibit any trace of eczema.

The whole subject of food in its relation to eczema is apparently about to be placed upon a much more scientific and secure foundation than it has rested on heretofore. Quite recently Towle and Talbot have announced that a considerable proportion of infants suffering from eczema show an excess of fat or of starch in the stools, a finding confirmed by the observations of White.

White and a number of others have also found that a considerable number of the subjects of chronic eczema exhibit anaphylactic reactions to certain food substances and the inference is made that such foods stand in a causal relation to the eczema. This susceptibility to certain food proteins may be demonstrated by the epidermic inoculation of food materials after the von Pirquet method, or by the intradermic injection of small quantities of the proteins from beef, egg-albumen, potato, etc., in sterile aqueous solution. A positive reaction is indicated by the appearance of a papule within a half-hour or hour at the site of the inoculation or injection.

These observations are not only of great scientific interest, but of the greatest practical importance, if subsequent investigation shall con-

firm their correctness. However, our knowledge of the whole subject of protein hypersensibility is still in the formative stage.

The author should like to point out, what seems at times to be overlooked, that abnormal sensibility to certain food proteins is not at all the same thing as indigestibility. Many articles of food which are known to exert an injurious effect upon the skin do so not because of their indigestibility, but because of other totally different qualities.

There is apparently considerable evidence to show that gout is frequently accompanied by eczema, but even this affection occupies a much less prominent place among its internal causes than formerly.

In a certain proportion of cases of chronic nephritis, eczema occurs as a complication, but it must be admitted that the vast majority of cases of the former run their course without any manifestation of the latter ever being present.

Diabetes markedly predisposes its subjects to various forms of inflammation of the skin, and is especially apt to be accompanied by eczema, particularly of the genital region, especially in women. The saturation of the tissues with sugar makes them especially liable to infections of various sorts after the slightest injury, and in the genital region the saccharine urine acts as a powerful local irritant.

Hepatic disease, especially when accompanied by icterus, may give rise indirectly to eczema through the scratching which results from the pruritus usually accompanying the presence of bile salts in the circulation.

Certain eczemas are supposed to be of reflex origin, such, for example, as those associated with dentition, intestinal parasites, or disease of the uterus. As to the first of these, there is, in the author's opinion, no proof based upon accurate observation that it may produce eczema, although existing eruptions may exhibit exacerbations with the eruption of the teeth.

Functional derangement of the nervous system seems at times to play a considerable etiological rôle; but, just how it does so, or whether it does so at all, is as yet largely a matter of conjecture.

Unusual dryness of the skin, either congenital (as in the milder grades of ichthyosis) or acquired, as in old age, markedly predisposes it to take on eczematous inflammation, especially when exposed to cold. Many individuals with ichthyosis suffer every winter from an eczema which persists until the return of warm weather.

External Causes.—Any agent which by contact with the skin may produce inflammation is a potential cause of eczema. Hence, a large number of chemical substances, drugs, dyestuffs, certain plants, such as the several varieties of rhus, heat and cold, and mechanical irritation, such as scratching, rubbing of the clothes, are among the many external causes of the disease. The susceptibility, however, of different individuals varies greatly, as has already been pointed out. In one, contact with such irritants is followed by a simple inflammation of the skin which runs an acute course and promptly disappears with the with-

cent., or it may be applied with a brush, diluted with varying quantities of olive oil or oil of sweet almond, or when there is much thickening it may be used undiluted.

In long-standing cases attended by marked infiltration and scaling, an alcoholic solution may be painted on limited areas with excellent effect. The ordinary tar may be used as a lotion in the shape of the liquor picis alkalinus diluted with four to six parts of water, but this should be used cautiously at first, as it is a decidedly stimulating application and frequently irritates. The composition of the liquor picis alkalinus is as follows:

℞

Picis liquidæ ..... ℥ ii (8.0)
Potassæ causticæ ..... ʒ i (4.0)
Aq. destil. ..... ℥ v (20.0)

Dissolve the potash in the water and add the tar slowly, rubbing the mixture in a mortar.

In subacute eczema the gelatins of Unna and others often afford a convenient and cleanly method of applying these several remedies. The formula employed by Unna is as follows: Gelatin, 15; glycerin, 15; zinc oxide, 30; water, 40. To this as a vehicle may be added various medicaments in varying proportions. The mixture is heated over a water-bath and when it is melted is applied with a flat brush and afterwards covered with a thin layer of absorbent cotton or gauze. The so-called plaster mulls are likewise a convenient form of local treatment, but neither these nor the gelatins are as efficacious as ointments and pastes, although much more cleanly and convenient.

When the disease is of long standing and has resulted in thick, dry patches, with a verrucous surface unusually rebellious to the ordinary remedies, chrysarobin, in an ointment or paste containing from three to five per cent., may be cautiously tried, or pyrogallol may be used in a similar manner. Both should be employed, however, with caution, and the latter should not be applied over any considerable surface. Green soap thoroughly rubbed into such thickened patches with a flannel cloth dipped in hot water may be applied daily, the skin afterwards being carefully rinsed off, dried, and lint spread with diachylon ointment bound upon the part. When other methods have failed, the careful use of the X-ray, giving short exposures every three or five days, will sometimes produce the desired result.

As has already been pointed out, the age of the patient and the locality affected often make important differences in the indications for the remedies to be used and the manner of their employment.

In the eczemas of infancy the diet and the condition of the gastro-intestinal tract should receive special consideration. Small doses of calomel, one-twentieth to one-fifteenth (0.003 to 0.004) of a grain three or four times a day and continued for three or four days at a time, will often be followed by prompt improvement. In acute eczema nothing is more useful than the alkaline menthol lotion, the

formula for which has already been given, with a half drachm (2.0) of bismuth subcarbonate added to each ounce (32.0), or followed by the liberal application of talcum powder. Special care should be taken to prevent the rubbing and scratching of the inflamed parts, since these add materially to the inflammation of the skin and prolong the disease. In infantile eczema of the face a resorcin lotion such as the one mentioned above is often most useful, in the strength of three to five grains (0.20 to 32.0) of resorcin to the ounce (32.0). This should be softly mopped on three or four times a day, and at night a paste containing calomel, such as the following, may be applied:

℞
Hydrarg. chlorid. mit. .....gr. x (0.65)
Pulv. amyli,
Pulv. talci .....aa ʒi (4.0)
Ung. aq. rosæ .....ʒ vi (24.0)
M.
Sig. Apply at bedtime.

When the skin is dry and scaly a similar paste containing one per cent. of salicylic acid and 0.5 per cent. of menthol will be found especially useful.

In eczema of the scalp, especially in children, crusting is apt to be very abundant, owing to the matting of the hair by serum, pus, and blood, and before any treatment can be effective these crusts must be removed. When they are not too adherent they may be removed with soap and hot water if previously softened by the application of vaseline or olive oil. When thick and adherent, the application of a starch poultice made up with a saturated solution of boric acid is usually the most effective and agreeable way of removing them. In children the hair should be cut short and kept so, since this greatly facilitates the application of the remedies and prevents the accumulation of crusts. One of the most generally useful remedies is an ointment of ammoniated mercury, twenty to thirty grains (1.30 to 2.0) to the ounce (32.0). If itching is a prominent symptom three to five grains (0.20 to 0.32) of menthol, or ten to fifteen grains (0.65 to 1.0) of phenol to each ounce (32.0), may be added to this ointment. If the scalp is dry and scaling, oil of cade, one or two drachms (4.0 to 8.0) to the ounce of cold cream or lanolin, will be found a useful application.

In subacute eczema of the scalp resorcin is often a most useful remedy employed as an ointment of two to three per cent. strength. Crocker found iodoform one of the most efficacious remedies in all forms of pustular eczema, a form particularly frequent in the scalp, but its abominable, far-reaching odor practically prohibits its use in private practice.

The best ointment bases for use upon the scalp are cold cream and a mixture of cosmoline three parts, lanolin one part. Bases con-

and is, consequently, more marked in the chronic than in the acute form. In addition to the parenchymatous œdema there is also an intercellular œdema which separates the cells and forms cavities between them whose walls are formed by greatly elongated and more or less degenerated epithelial cells. These cavities are the vesicles (Fig 29) which frequently occur in eczema and are filled with serum, small quantities of fibrin and a varying number of polymorphonuclear leucocytes. These vesicles may form in any portion of the rete, but are usually situated just beneath the horny layer. This intercellular œdema and

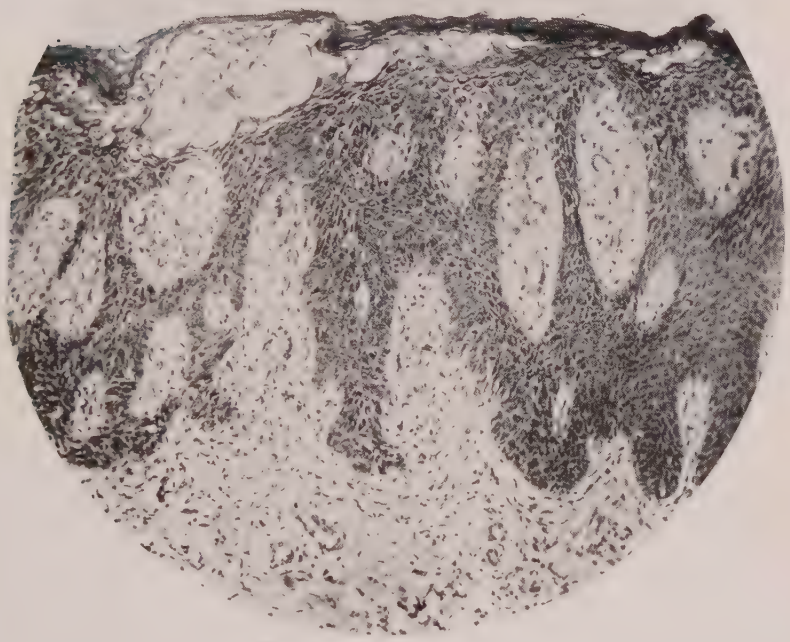


FIG. 30.—Eczema rubrum, leg. Note increased breadth of rete mucosum, formation of vesicles (*V*) beneath horny layer, which is quite thin. Moderate round-cell exudate in the upper portion of corium.

formation of cavities between the epithelial cells constitute the "spongy transformation" of the rete of Unna. According to this author the formation of the vesicle of eczema differs materially from the formation of the vesicle in other vesicular eruptions, such as herpes, for example. In the former, as has just been described, the vesicle is an intercellular cavity, while in the latter it arises within the cell through colliquation of its protoplasm, several cells uniting to form a multilocular lesion (Fig. 30).

Pigmentation of the lower layers of the rete is common in chronic

cases, especially when the disease is situated upon the lower extremities.

The changes in the corium are much less characteristic than those in the epidermis. There is dilatation of the blood- and lymph-vessels in the papillary and subpapillary layers, a more or less marked œdema of the papillæ, a moderate amount of cellular exudate, chiefly in the immediate neighborhood of the blood-vessels, and an increase in the number of connective-tissue cells. The extent and degree of these changes vary decidedly according to the duration of the disease.

Beyond some swelling, the collagen fibres show but little alteration and the elastic tissue is usually well preserved, except in long-standing cases with much cellular exudation in which it may have completely disappeared.

In eczema sclerosum and in the cases with elephantiasic enlargement occasionally seen upon the legs, there is a marked increase in the fibrous tissue, which in the latter form leads to obstruction of the lymph channels.

In verrucose eczema, always a very chronic form, there is a pronounced inflammatory exudate in the papillary layer of the corium with consequent enlargement of the papillæ, which gives to the disease its verrucose aspect.

Diagnosis.—The diagnosis of eczema in all its forms commonly presents no unusual difficulty. The violent itching which is so common and often so distressing a symptom; the oozing and crusting which occur in so large a proportion of cases; its frequent localization in certain regions, such as the face and behind the ears in children, about the genitalia and anus in adults, upon the legs in middle-aged and old subjects and its chronic course in the vast majority of instances, are features which are more or less characteristic, distinguishing it from other cutaneous inflammations. Nevertheless mistakes in diagnosis are common.

Acute erythematous eczema is likely to be mistaken for mild dermatitis and is frequently confounded with the early stage of acne rosacea, various forms of erythema, and with erysipelas.

A dermatitis usually runs a much more acute course than eczema, is much more likely to be situated upon exposed parts, such as the hands and face, and is often known to have been preceded by contact with some plant or irritating chemical substance.

The earliest stage of acne rosacea which is characterized by redness, at times without papules and pustules, may be mistaken for an erythematous eczema, but the latter is not confined to the nose, cheeks and chin, like the former, and is accompanied by marked itching, a symptom usually absent in acne, or, if present, only so in a trifling degree.

The various erythemata which are at times mistaken for erythematous eczema are as a rule very acute in their course, are apt to be patchy rather than diffuse, and are rarely accompanied by severe itching, usually a most pronounced symptom in eczema.

There is usually but little excuse for mistaking acute erythematous eczema for erysipelas, but this is a very common error. The patches of erysipelas are dusky-red, with well-defined, slightly elevated borders and spread peripherally from a single point; the patches of erythematous eczema are diffuse without definite margins and, as a rule, with little swelling. The former is always, except in cases of small extent and of the mildest character, accompanied by fever, headache and other symptoms of constitutional disturbance; in the latter these are absent.

Papular eczema is to be distinguished from urticaria, lichen planus and prurigo. In urticaria the lesions are wheals, whitish or pinkish elevations of varying size, which are accompanied by extreme itching and burning and are usually of very short duration, quite unlike the papules of eczema in this respect. They are usually discrete and show no tendency to form patches such as occur in eczema.

The papules of lichen planus are commonly violaceous, with angular or polygonal bases and flat, glistening tops, and occasionally show a small umbilication; those of eczema are red, with rounded or acuminate tops and round bases, and are never umbilicated. The patches of lichen planus are usually covered with a fine, adherent, silvery-white scale altogether unlike the branny scaling seen in eczema. The papules of lichen planus occasionally show a marked tendency to appear in scratch-marks—those of eczema never do so.

Prurigo is a rare affection in America, and usually begins in the first year or two of life. The eruption is widely distributed and the skin is rough and thick, presenting much greater alterations than are seen in papular eczema.

Vesicular eczema may be confounded with various forms of dermatitis venenata and with herpes. In vesicular eczema the inflammation is rarely so acute or so severe as in dermatitis, nor is it confined to exposed parts of the skin, as is commonly the case with the latter. In dermatitis bullæ are common when the inflammation is severe; in eczema these are infrequent.

In herpes of all varieties the vesicles are arranged in groups, in simple herpes about the mouth and nose, commonly, or some other part of the face, in herpes zoster over the course of a nerve. In the latter there is frequently more or less severe pain. None of these symptoms is present in eczema.

Vesicular eczema and dermatitis herpetiformis may at times be mistaken for each other when the grouping of the eruption, which is a characteristic feature of the latter, is little pronounced. Sooner or later, however, the grouping becomes more definite and the eruption exhibits a more or less decided polymorphism.

Pustular eczema is to be distinguished from pediculosis capitis, from impetigo contagiosa, and from sycosis vulgaris. Pediculosis of the scalp is frequently mistaken for a pustular eczema, and the two frequently coexist, the latter often as a sequel of the former. The

presence of a pustular eczema in the occipital region in children is almost invariably due to pediculi. The diagnosis is of the easiest, the ova being readily found. In impetigo contagiosa the lesions are usually discrete, few in numbers and rapidly spread peripherally, drying into thin crusts. They are situated upon the face and hands far more frequently than elsewhere.

Pustular eczema of the beard and sycosis vulgaris may resemble each other quite closely at times, but the former is diffuse and usually extends beyond the bearded region, while the latter is a folliculitis of the beard and is limited to it. In eczema other regions are apt to be affected, and oozing and crusting are prominent symptoms; in sycosis oozing does not occur, and crusting is rarely so pronounced as in eczema. In eczema there is more or less marked itching; in sycosis the subjective symptoms, when present, are burning and sometimes pain, but are often trivial or even absent altogether.

Squamous eczema is to be differentiated from psoriasis, seborrhœa, ringworm, lupus erythematosus and from the squamous syphiloderm. Squamous eczema does not often occur in sharply marginate patches, while this is the rule in psoriasis; the scales of eczema are usually much less abundant than in psoriasis, nor are they laminated like those of the latter. Eczema shows no predilection for the extensor surfaces of the extremities, such as is frequently a marked characteristic of psoriasis. Psoriasis is uncommon on the palms and soles, regions which are frequently attacked by squamous eczema. Itching is present in almost all cases of eczema, but is infrequent or absent altogether in psoriasis. Eczema frequently is moist at some time or other in its course, psoriasis never.

Squamous eczema of the scalp differs from seborrhœa of that region by the dryness of the scales and the presence of symptoms of inflammation. In seborrhœa the scales are greasy and the scalp beneath is normal in color or occasionally paler than normal. Itching is common in the former and infrequent or trifling in the latter.

Squamous eczema and erythematous lupus of the superficial type may, in exceptional cases, resemble each other sufficiently to lead to error in diagnosis. The latter is, in the great majority of cases, situated upon the cheeks and over the bridge of the nose, regions rarely attacked by the former; the patches are sharply limited instead of diffuse, and the scaling is slight. Itching is rarely a symptom of lupus, while it is the rule in eczema.

Scaly eczema of the palms and the scaly palmar syphiloderm may at times present considerable similarity in their appearance, but the former rarely exhibits the sharply circumscribed borders nor the circular shape so common in patches of the latter. Eczema is usually bilateral, syphilis unilateral; the former is often intensely itchy, the latter rarely itches at all. In eczema there is often decided thickening, and fissures are common; in the squamous syphiloderm there is usually but little thickening or fissuring.

Eczema of the anus and of the vulva is frequently mistaken for pruritus of those regions, but even a superficial examination of the parts is sufficient to differentiate the two affections. The former is characterized by redness, oozing and excoriations, while in the latter itching is the sole symptom. It must be remembered that eczema is often a sequel of pruritus, owing to the frequently-repeated and often prolonged irritation produced by scratching in the latter.

Universal eczema is at times to be differentiated from dermatitis exfoliativa. The latter seldom if ever presents the thickening of the skin seen in the former, and the scaling is much more pronounced. In certain cases, however, a universal eczema may terminate in a dermatitis exfoliativa and is then, of course, indistinguishable from it.

Eczema of the breast, when situated upon the areola and nipple, its most frequent site, and Paget's disease of the same region resemble each other very closely, but also present certain differences by which they may be distinguished, in most cases without much difficulty. The patch of eczema is rarely so sharply limited as that of Paget's disease and shows no noticeable thickening. The latter presents a parchment-like induration, "like a penny felt through a cloth," and after a time the nipple is more or less completely destroyed or retracted, and carcinoma of the mammary gland invariably occurs sooner or later. Eczema occurs most commonly during the child-bearing period and in nursing women; Paget's disease usually occurs after the menopause.

The parasitic diseases—scabies, pediculosis corporis and certain forms of ringworm—may at times bear a considerable resemblance to eczema, but a little care in examination usually readily enables one to make the differential diagnosis.

Eczema shows no special regional predilection; scabies occurs most frequently upon the hands, especially between the fingers, on the flexor surface of the wrists, the anterior border of the axillæ, the abdomen and thighs, upon the shaft of the penis and in the areola of the nipple in women, and is distinguished by a pathognomonic symptom,—the burrow. Moreover, there is frequently a history of contagion in scabies, never in eczema.

The eruption of pediculosis corporis is practically altogether a secondary to scratching and consists largely of linear excoriations situated upon covered parts of the body only, in regions readily accessible to the patient's nails, such as the shoulders, the sacral region, the buttocks and the lower extremities.

Ringworm affecting the inner surface of the upper thighs and the axillæ often presents the appearance of an erythemato-squamous eczema, or in severe cases of an eczema rubrum. Indeed, this variety of ringworm was formerly regarded as a peculiar form of eczema and was called eczema marginatum. It differs from eczema of these regions by the rounded shape and sharp limitation of the borders of the patch, and the tendency of the centre, in many cases, to undergo involution while it extends at the periphery. In eczema the patches

usually have ill-defined borders and show no tendency to central involution. In the parasitic affection the *epidermophyton inguinale,* a fungus closely akin to the trichophyton, may be readily found in the scales on the borders of the patches.

Prognosis.—In the vast majority of cases of eczema the prognosis as to eventual recovery is highly favorable. It is true, however, that in many cases the disease runs a protracted course, requiring months, or in some instances a year or two, to recover, and relapses are common. The acute forms usually respond readily to appropriate treatment, but when injudiciously treated or neglected they often become chronic. Long-standing cases, attended by dryness, scaling and thickening of the skin, are much less readily curable than those of comparatively short duration with slight or moderate structural change. Especially rebellious forms are the papular, particularly when accompanied by much thickening, squamous eczema of the palms and soles, and eczema of the anus, scrotum and vulva. Eczema of the anus and vulva is among the most obstinate and distressing of all the varieties. Vesicular eczema, occurring in rounded patches upon the back of the hands accompanied by free oozing and crusting, is often most resistant to treatment and particularly subject to relapse. Infantile eczema, although relapsing frequently, is usually quite amenable to treatment, and a cure, even in the most rebellious cases, may be confidently predicted. With the exception of chronic eczema of the legs, in which permanent pigmentation frequently follows, the disease disappears without leaving any trace of its existence. Scarring never occurs in uncomplicated cases, even of the severest type.

The notion formerly entertained, and yet prevalent among the laity and shared by some physicians, that it may be dangerous to cure a chronic eczema quickly, that serious general disturbance, or even fatal consequences may follow, is wholly without foundation.

Treatment.—In beginning the treatment of any case of eczema every effort should be made to discover, if possible, its cause, but unfortunately this only too frequently eludes the most careful search. In those cases in which the disease is confined to uncovered parts, such as the hands, neck and face, the possibility of a strictly locally-acting cause, some irritant substance employed by the patient in his daily work, some favorite hair-wash, or a neck fur, should never be overlooked, and the most searching inquiry should always be made in such cases, an inquiry often rewarded with the discovery of some local irritant whose removal or avoidance is followed by speedy recovery and freedom from some long-lasting eczema.

If no local cause can be discovered, the patient's general condition should be subjected to a careful examination. Every organ should be interrogated to ascertain if its functions are properly performed; the patient's occupation and habits should be minutely inquired into, since these often have an important bearing upon the origin of his disease. His previous medical history should be carefully gone into, this being

an especially important matter as showing the patient's pathological tendencies.

While in many cases constitutional treatment is necessary, or at least helpful, there are many others in which local treatment alone may accomplish the cure and in which internal treatment is useless or of more than doubtful value.

As there is no single specific cause of eczema, so there is no specific remedy for it. The internal treatment is directed, not so much against the eczema as against those derangements of special organs, or of the general economy, which act as favoring causes of the cutaneous disease.

The diet must be regulated according to the circumstances of each case. In robust, well-nourished individuals who frequently over-eat, taking an excess of rich food, more or less restriction of the quantity and quality of the food will frequently be advantageous, while those whose nutrition is under the normal will be benefited by an increase in the amount of food taken, provided it is of a kind easily digested and readily assimilated. In children, even more than in adults, the diet should be carefully supervised, and in bottle-fed infants this is often a most difficult part of the treatment.

Certain articles, such as pork, cheese, and shell-fish, except oysters, should as a rule be denied eczematous patients. The possible presence of a protein hypersensitiveness should be kept in mind, and its presence or absence determined by a detailed study of the patient's diet, or by the employment of the cutaneous tests previously referred to (*vid.* Etiology). If present, such foods as produce an anaphylactic reaction should, as far as possible, be rigidly excluded from the dietary. As to the matter of beverages he is much better without either tea or coffee, or if they are taken at all, they should be allowed in moderate quantities only. Alcoholic drinks are upon the whole injurious, although elderly individuals, who have been in the habit of taking moderate quantities of alcohol, may be permitted to continue its moderate use, whiskey being the least objectionable and malt liquors and sweet wines the most hurtful. Alkaline waters, such as Vichy, may often be used with advantage, especially in the plethoric and in those with gouty tendencies. The use of tobacco should be greatly restricted, especially smoking. Inordinate use of the pipe or cigars is frequently injurious to those with extensive eczema. In acute eczemas of considerable extent a restricted diet is as a rule indicated, limiting especially the amount of meat taken; on the other hand, harm is frequently done by the complete withdrawal of meats in elderly individuals suffering from eczema, as is frequently advised.

In those with gout a strict regimen should be adopted, and in the eczema accompanying diabetes a diet free from sugar and starches is an essential part of the treatment. In patients with chronic nephritis, who suffer from eczema, a restriction in the amount of nitrogenous food taken, and the use of a milk diet are indicated.

The patient's underwear, especially if a child, should have attention.

Woollen undergarments, as has been mentioned elsewhere, often irritate the sound skin and should never be worn next the skin by individuals with eczema. If for any reason it is deemed necessary that wool be worn, thin cotton gauze or silk should be worn underneath it. All rough edges about the underwear should be carefully looked after; a collar band or a wristband frequently determines the localization of an eczema about the neck or wrist.

Coming now to the medicinal treatment, much more will depend upon the patient's general condition than upon the fact that he has an eczema. In those who suffer from the many symptoms which are included under the term dyspepsia or indigestion, such as flatulence, constipation, heartburn and other forms of distress after eating, remedies appropriate to these should be employed. For constipation, which is a frequent condition, laxatives should be administered, preferably the salines in the shape of some one of the bitter waters, such as Hunyadi Janos, Apenta, or a pill of aloin, strychnia and belladonna, or cascara may be given. Occasional short courses of fractional doses of calomel followed by a saline will often be found especially useful, particularly in the eczemas of children. In the latter, even when no symptoms of disturbed or faulty digestion are present, small doses of calomel or mercury-with-chalk given for three or four days in succession will often be followed by decided improvement in the condition of the skin. In those who suffer from eructations after eating, alkalies may be given, such as bicarbonate of soda in compound tincture of gentian; or some bitter tonic, such as nux vomica or strychnia, either alone or with hydrochloric acid, will frequently serve a useful purpose. In patients with irregular attacks of diarrhœa the salts of bismuth, especially the salicylate or salol, taken before meals, will be found effective.

In the anæmic, iron, either alone or with small doses of arsenic, is indicated. In those who present evidence of a tuberculous tendency in the shape of swollen lymphatic glands, cod-liver oil is a valuable remedy, especially useful in the pustular eczemas of strumous children.

In eczema occurring in the gouty, besides the careful supervision of the patient's diet and habits of life, already referred to, the alkalies, particularly the salts of lithia, the salicylates and, under certain conditions, colchicum, should be administered.

When chronic nephritis is associated with the eczema the alkaline diuretics with an abundance of milk and water should be taken.

In acute eczema, especially when large areas are involved and even when there are no symptoms of gastro-intestinal disorder, a brisk purge given in the early stage is often of advantage. The citrate of potash, or, when the excretion of urine is scanty, the acetate, given in doses sufficient to make the urine alkaline and keep it so, is often useful in alleviating the irritability of the skin, not only in acute eczema, but in the acute exacerbations of the chronic form, but these should not be continued above a week or ten days at a time. In robust plethoric individuals, small doses of antimony given three or four

times a day may, in acute cases, be employed with good effect for a short time.

When itching is severe and continuous, the use of some one of the coal-tar analgesics will occasionally afford a certain degree of relief. Phenacetin is one of the best and least harmful of these and is often distinctly useful when the continuous pruritus has made sleep impossible. The extract of cannabis indica in full doses, either alone or combined with hyoscyamus, is likewise occasionally useful for the relief of itching. Opium and its alkaloids should not be given for this purpose, since in many individuals they produce itching and rarely afford relief, unless given in considerable doses, a relief which may be purchased by an increase in this symptom when the effects of the drug have passed.

For a long period of years arsenic was regarded as a valuable internal remedy in eczema, but at the present time its use is very limited. There is little doubt that it is not only useless but positively harmful in all the acute forms of the disease without exception. While some regard it as occasionally useful in the chronic forms, especially those characterized by dryness of the skin with thickening, all are agreed that it is at best an uncertain remedy. Although I have given it an abundant trial in former years, I have never seen any benefit from it and have occasionally seen it do harm.

While a considerable proportion of cases of eczema may be quite well and satisfactorily treated without the use of internal remedies, few or no cases can dispense with some kind of local treatment. This is frequently quite adequate for the cure and is often indispensable for the relief of symptoms.

In the early stages of acute eczema, if the inflammation is at all marked, lotions as a rule will be found to be better borne and to give more relief than ointments, partly, no doubt, because of the cooling effect produced by their evaporation. If the lotion contains only soluble substances, it may be applied most conveniently and effectively by means of an atomizer, a very cleanly and agreeable way of using such remedies. If, however, it also contains insoluble powders in suspension, as is often the case, it should be softly dabbed on with lint or absorbent cotton.

Among the many lotions which may be used with good effect in acute erythematous or vesicular eczema a saturated solution of boric acid, sprayed or mopped on the inflamed surface every two, three or four hours, is one of the most useful. The good effect of such a lotion is often materially enhanced by following it with a dusting powder of talcum or one composed of equal parts of starch and oxide of zinc, or, when there is discharge, as in acute vesicular eczema, a powder of talcum two parts, and boric acid one part, may be used instead. Black wash, the lotio nigra of the Pharmacopœia, in full strength or diluted with an equal quantity of lime water, is another useful lotion which may be softly mopped on three or four times a day. One of the most

effective applications, especially useful for the relief of the itching and burning which are always more or less prominent symptoms in acute eczema, is an alkaline lotion containing a small quantity of menthol, such as the following:

℞
Sodii biboratis ..... gr. xv (1.0)
Mentholis ..... gr. iv. (0.25)
Glycerin ..... f℥ i (4.0)
Ad. destil. ..... q.s. ad f℥ iv (12.0)
M. Filtra.
Sig. Apply with an atomizer.

This lotion may be applied every two or three hours.

A one to two per cent. solution of carbolic acid in water, either alone, or, if there is discharge, with one-half drachm (2.0) of oxide of zinc, subcarbonate or subgallate of bismuth in suspension with each ounce (32.0), will often be found the most effective application for the relief of itching; occasionally it irritates the skin and must be suspended.

When the inflammation has somewhat subsided, mild ointments may be used, either alone or in combination with some of the foregoing lotions, the lotion being first applied and the ointment when the former has dried. An ointment containing two drachms (8.0) of oxide of zinc to the ounce (32.0) of cold cream (unguentum aquæ rosæ) may be thus employed, or a simple paste composed of twenty-five per cent. each of powdered starch and subcarbonate of bismuth and fifty per cent. of petrolatum. If a paste is used, the patient should be directed to remove the old application each time, before making a new one, with olive oil or vaseline, not with water.

Other lotions which are more or less useful are weak solutions of subacetate of lead, one part of the dilute lead water to two parts of water, or a solution of resorcin three to five grains (0.20) (0.32) to the ounce (32.0) of water or lime water. If the inflammation is very acute, however, one of the first-mentioned lotions, especially the alkaline lotion containing menthol, will be better borne.

When opposed surfaces are the seat of the eczema dusting powders are frequently of use. Those composed of inorganic material, such as oxide of zinc, subcarbonate of bismuth and talcum, are much to be preferred to such powders as starch and lycopodium, since the latter are apt when they become moist to undergo fermentation and act as irritants. To these dusting powders small quantities of carbolic acid or menthol may be added to allay itching. Their use should be preceded by the application of the lotion and they should be liberally applied and often.

In the terminal stages of acute eczema, when the inflammation has to a considerable degree subsided, but the skin is somewhat red and covered with scales or crusts, and when itching is still a prominent symptom, mildly stimulating ointments are indicated. Ten grains (0.65) of calomel or ammoniated mercury to the ounce (32.0) of equal

parts of vaseline and lanolin or a paste, such as has been described above containing two per cent. of salicylic acid, and one-half per cent. of menthol, may be used, especially when there is dry scaling with considerable itching. An ointment containing from one to two per cent. of resorcin is likewise often most useful. Great care is always necessary at this stage to avoid irritating the skin and relighting the inflammation by the employment of too stimulating ointments.

A very important preliminary frequently necessary in chronic eczema is the removal of crusts and scales, which are often present in considerable quantity, and unless removed make applications of any sort nugatory, since they protect the diseased skin beneath. Such crusts may usually be removed by the liberal application of some bland fat, such as olive oil or vaseline liberally applied. Occasionally, however, they are quite adherent and cannot be easily removed; under such circumstances they may be loosened by the application of a starch poultice made with a saturated solution of boric acid. When the inflammation is of moderate severity, soap and hot water or tincture of green soap may be employed, but these should be used only for this preliminary cleansing, as they are, as a rule, more or less injurious to eczematous skin.

Chronic eczema as a rule demands more stimulating applications than the acute form, but it should always be borne in mind that in many cases, although they have existed for months and even years and are therefore very properly designated as chronic, exacerbations occur which for the time transform them into acute eczema, which should be treated as such until the acute outbreak has subsided.

Although lotions are less generally useful in the local treatment of chronic eczema than in the acute variety, they frequently serve a useful purpose in relieving certain symptoms, such as heat and itching. A resorcin lotion, such as the following, will frequently afford much relief:

℞
Resorcini .....gr. xx to xxx (1.30–2.0)
Bismuthi subcarbonatis .....ʒ ii (8.0)
Glycerini .....fʒ i (4.0)
Aq. destil. .....fʒ iv (120.0)
Mix.
Sig. Apply three times a day.

When oozing is present the subgallate of bismuth may be substituted for the subcarbonate.

A lotion containing coal-tar, such as the following, frequently affords great relief to the itching in many forms of chronic eczema:

℞
Liq. carbonis detergentis .....fʒ i (32.0)
Glycerini .....fʒ ii (8.0)
Liquor calcis,
Aq. .....aa fʒ ii (64.0)
Mix.
Sig. Apply t.i.d.

If the itching is unusually severe and rebellious the sedative qualities of this lotion may be materially increased by the addition of from one to two per cent. of phenol. This lotion is especially useful in the dry forms of eczema, particularly the papular, but sometimes irritates when the surface is raw and oozing.

Ointments and their modifications are the most generally employed of all the local remedies used in the treatment of chronic eczema, and the manner of their employment is almost, if not quite, as important as their composition. Pastes, which are a modification of ointments, are often more serviceable than the latter, since they afford better protection to the skin, being more adhesive, but they are not so readily rubbed in.

In chronic eczema with dryness and moderate thickening an ointment containing from 2 to 3 per cent. of salicylic acid or a paste of the same strength is particularly useful. In the moist forms, however, it is less well borne, and should be used in a strength of not more than one per cent. When itching is present, a half per cent. of menthol or two or three per cent. of phenol may be added.

℞
Acid. salicylic. .....gr. x (0.65)
Pulv. amyli,
Bismuthi subcarbonat. .....aa ʒ ii (8.0)
Petrolat. .....℥ss (15.0)
Mentholis gr. iii vel phenolis.....gr. x (0.20–0.65)
Mix.
Sig. Apply twice a day, with gentle friction.

Calomel and ammoniated mercury in ointment containing from 30 to 60 grains (2.0 to 4.0) to the ounce (32.0) are both useful remedies, especially the latter. Of course, these are to be employed only over surfaces of limited extent; otherwise ptyalism may result.

An ointment of resorcin containing from two to three per cent. is frequently a useful remedy, allaying itching and favoring keratinization. It is to be used, however, with a certain degree of caution in the beginning, since in the author's experience it occasionally irritates even in moderate strength.

Tar in its various forms has long been regarded as one of the most useful local remedies in the treatment of chronic eczema, and there is little doubt that it frequently renders most valuable service. It is often, however, a most uncertain remedy, disagreeing at times in cases in which it seems to be plainly indicated. It should never be employed when the inflammation is acute, but should be reserved for those cases in which the skin is dry, thickened, and scaly. The several forms of tar employed are the pix liquida or the ordinary wood tar, oil of cade, and the oil of birch. Of these the oil of cade is on many accounts to be preferred. The official tar ointment of the Pharmacopœia is dirty, with a strong odor, and possesses no therapeutic properties superior to the other forms of tar. The oil of cade may be used as an ointment or paste containing from twenty-five to fifty per

drawal of the irritant; in another, the inflammation does not subside when the skin is no longer in contact with the irritant agent, but continues indefinitely. It is a curiously interesting and important fact that in many individuals a skin once inflamed by a certain irritant, such for example as formaldehyde, becomes increasingly sensitive to this irritant, so that after a time the slightest exposure is capable of calling forth an inflammation, and each attack disappears less readily than before until a chronic eczema is established. Examples of this are frequently seen in the so-called trade eczemas, which occur in dyers, chemists, photographers, metal polishers, etc. While it is possible for an eczema to follow a single exposure to an irritant in individuals with an especially sensitive skin or with a so-called eczematous tendency, it is in the great majority of cases the result of frequently repeated and prolonged exposure. Certain substances which are not ordinarily regarded as irritants, such as soap and water, are frequently the cause of eczema, as is often seen on the hands of washerwomen, bartenders, and others whose occupations compel them to have the hands wet for long periods.

Heat and cold, especially the latter, frequently act as predisposing causes. In many cases eczema occurs in winter only, disappearing more or less completely with the advent of warm weather. At other times the reverse is true, an increase in the symptoms coinciding with warm weather.

There is no conclusive evidence that microörganisms play any rôle among the direct primary causes of eczema, but it is altogether probable that the disease is frequently materially modified in its course and symptoms by secondary infection with various microörganisms, especially the staphylococci. Bockhart, Bender and Gerlach found that inoculation of the skin with staphylococci produced impetiginous and pyodermic inflammations, but never eczema, but if a filtrate from a bouillon culture was applied to the skin on moist warm bandages for some hours a typical papular and vesicular eczema was produced, and they conclude accordingly that it is the staphylococcus toxin that produces eczema and not the organism itself, a distinction without a difference. Cole, in a quite recent bacteriological and experimental study of eczema and the pyodermias, could not demonstrate any etiological relationship of staphylococci or streptococci to the former.

Pathology.—As has already been stated, eczema is an inflammation of the skin, a dermatitis, and the pathological changes in it do not differ essentially from other forms of dermatitis, such as may arise from contact with irritant substances of various kinds. Changes are found in both the epidermis and corium, but pathologists are not agreed as to where the primary changes occur, whether in the former or in the latter. Leloir and Vidal, Crocker, and others believed that the changes in the epidermis preceded those in the corium. Other investigators, prominent among whom is Unna, assert that the epidermis is primarily affected.

As the result of a parenchymatous œdema of the prickle-cell layer

of the epidermis, which has interfered with the normal processes of keratinization, the horny layer presents a condition known as parakeratosis, a term first employed by Auspitz. The cells of this layer are moister than normal and somewhat swollen. Many of them still retain more or less well-formed nuclei and between them, here and there, are small collections of leucocytes. In certain areas the granular layer is no longer visible, owing to the absence of keratohyaline granules, the result of the interference with the normal transformation of the prickle-cells. The desquamation which is a frequent symptom in eczema is the expression of this parakeratosis. Owing to their moist and swollen condition, the horny cells are only loosely held together

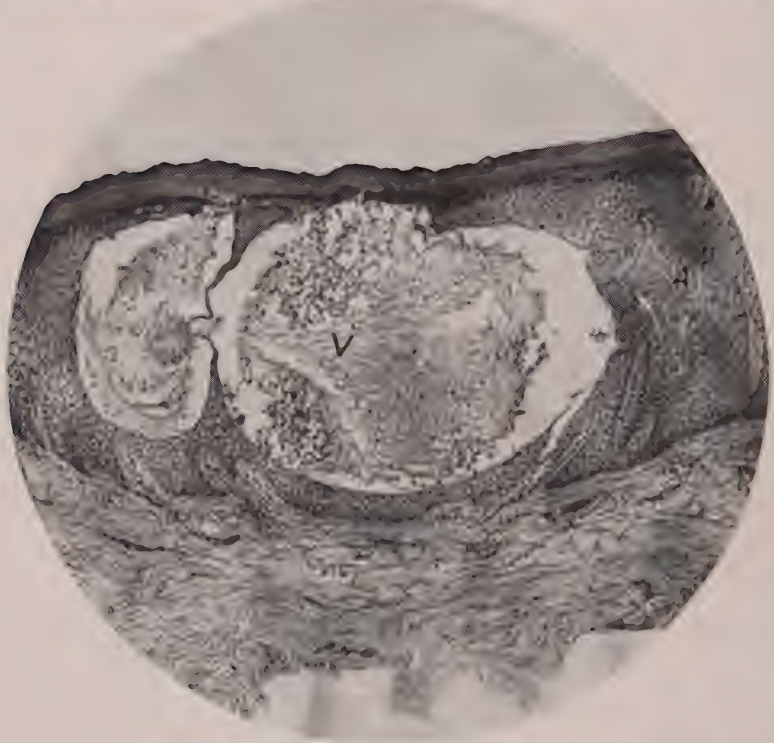


FIG. 29.—Vesicular eczema. Vesicle, *V*, filled with coagulated fibrin in which are a few cells, chiefly polymorphonuclears. *A*, widened rete (acanthosis).

and readily separate from the rete in the shape of scales. In the moist and oozing form the horny layer is completely lost in places, laying bare the rete.

In chronic eczema of the palms and soles, especially the latter, when the disease has been of long duration, there is at times an enormous increase in the thickness of the horny layer (hyperkeratosis).

Owing to the œdema and multiplication of its cells, the prickle-cell layer is more or less increased in width (acanthosis). The amount of increase in breadth depends largely upon the duration of the disease

taining lard usually become rancid very quickly in this region and should not be employed. The pastes which are so useful in other regions should not be used upon the scalp except in very small children with little hair.

In eczema of the ears, especially when it affects the sulcus behind the ear, some form of paste is commonly more useful than ointments; one containing fifteen to twenty grains (1.0 to 1.30) of calomel, or 1 to 2 per cent. of salicylic acid, usually answers well. It is important in such cases to keep the parts dry, which may be accomplished by the liberal application of a dusting powder such as equal parts of talcum and oxide of zinc, or by keeping strips of lint back of the ears. If a dusting powder is used it should not be allowed to accumulate unduly, but should be gently removed once a day by the free application of cosmoline or olive oil. When the auditory canal is affected, ointments containing some one of the above remedies may be applied on tampons of absorbent cotton or with a camel's-hair brush, the ointments having been thinned sufficiently with oil of sweet almond or fluid cosmoline. Very frequently the itching in the meatus is intense and the inflammation is greatly aggravated by rubbing with some hard substance, such as a hairpin or toothpick, which the patient uses to obtain relief. Of course, this should be prohibited. For the relief of this itching nothing is better than menthol, which may be added to the ointment in the strength of 0.5 per cent.

In the treatment of eczema of the lids, if the inflammation is at all acute, lotions are to be preferred to ointments, and special care must be used to avoid irritation owing to the unusual delicacy of the skin in this region. A saturated solution of boric acid in water with ten to fifteen minims of glycerin to each ounce (32.0) forms a valuable lotion which may be applied three or four times a day, or if there is much swelling the solution may be applied continuously on gauze or lint. Another useful lotion is the black wash, lotio nigra. After the inflammation has somewhat subsided, these lotions may be used in combination with a soothing ointment such as the following:

℞

Bismuthi subcarb. .....2 drachms (8.0)
Ung. aq. rosæ .....6 drachms (24.0)

M.

The lotion should be allowed to dry before applying the ointment. When the inflammation is subacute or chronic, mildly stimulating ointments or a soft paste containing 0.5 to 1 per cent. of salicylic acid or two per cent. of calomel may be used. Owing to its volatility and its consequent liability to irritate the conjunctiva, menthol is not so well adapted for the relief of itching in this region, which often proves most annoying, but phenol should be used instead in the strength of two per cent. A resorcin ointment containing one per

cent. is at times useful, but should be tried cautiously at first, since it sometimes irritates in this region in any strength.

In eczema of the margin of the lids a favorite remedy with the ophthalmologists is the yellow oxide of mercury in an ointment containing from one to two per cent., but other preparations of mercury, such as calomel or the ammoniated mercury, are probably just as useful. Crusts which adhere to the lashes are often present and should always be carefully removed before applying the ointment, first softening them with a solution of sodium borate, three to five grains (0.20 to 32.0) to the ounce (32.0) of warm water, or with vaseline or oil of sweet almond.

Eczema of the beard (Plate IX), like eczema of the scalp, is often accompanied by abundant crusting and is apt to be of the pustular type. Much the same remedies may be employed in its treatment as have been advised for the scalp, namely, ammoniated mercury or calomel, but it should be remembered that the face is much less tolerant of stimulation than the scalp, and therefore the ointments should be milder. In chronic cases stimulating ointments containing ammoniated mercury, twenty to thirty grains (1.30 to 2.0) to the ounce (32.0), or ten grains (0.65) of salicylic acid, may be used with good effect, the former particularly when the disease is of the pustular variety. In the dry forms with thickening and scaling, oil of cade, one or two drachms (4.0 or 8.0) to the ounce (32.0), will be found useful. In order to facilitate the application of the remedies and to prevent the accumulation of crusts, the beard should be kept closely clipped.

In ordinary eczema of the hands the usual remedies are indicated, but in that rebellious form characterized by coin-sized, roundish patches of rather large vesicles which soon rupture, giving exit to an abundant discharge of syrupy serum, nothing is quite so effective as the X-ray, giving a five-minute exposure every three or four days. A lotion of resorcin, six to eight grains (0.40 to 0.50) to the ounce (32.0), containing ½ drachm (2.0) of subgallate of bismuth in each ounce (32.0), is often of much service in relieving the itching and in drying up the discharge.

A paste containing 1 per cent. of salicylic acid is likewise useful. In scaly eczema of the palm, with thickening and fissuring, a most useful application is the following:

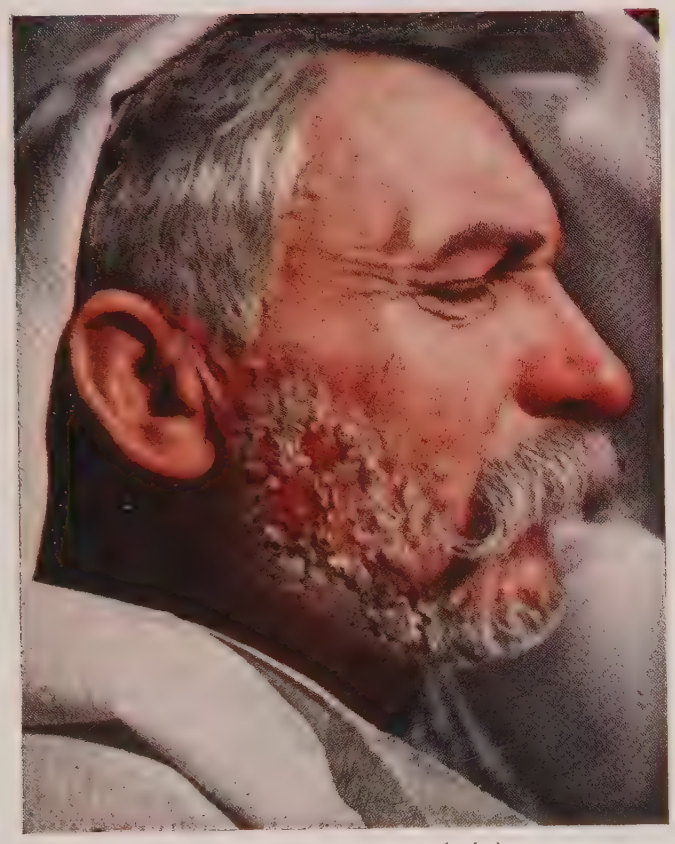
℞

Liquor. carbonis detergentis .....f℥ ii (60.0)
Glycerini .....f℥ i (32.0)

M.

A teaspoonful of this should be poured into the palms and thoroughly rubbed in two or three times a day, wiping off the excess with a soft cloth. When the horny layer of the palm is much thickened, ointments of salicylic acid, twenty to thirty grains (1.30 to 2.0) to

PLATE IX



Eczema of the beard (Eczema barbæ)

the ounce (32.0), or of tar, twenty-five to fifty per cent., should be thoroughly rubbed in, employing as a base five parts of lard and three parts of lanolin, or lanolin six parts and glycerin two. As many eczemas of the hand are examples of occupational disease, it is frequently most difficult to treat them successfully so long as the patient continues at his occupation. In the case of women doing housework the hands may be protected from the injurious effects of soap and water to some extent by the frequent application of simple fats, or, what is less to be advised, by the wearing of rubber gloves.

In eczemas affecting the nipple and areola of the female breast, a soft paste containing two per cent. of salicylic acid with 0.5 to one per cent. of menthol is a useful application. When the patient is a nursing woman painful fissures of the nipple are frequently associated with the eczematous inflammation; these should be painted with tincture of benzoin or collodion, and a nipple shield should be used when the infant is nursing. Sometimes lightly touching with the solid stick of nitrate of silver or painting the fissures with a solution, one drachm (4.0) to the ounce (32.0), will heal them more quickly. Exceptionally it may be necessary to wean the infant.

In eczema of the genitalia, particularly of the vulva, examination of the urine for sugar should never be omitted. When glycosuria is present a diet free from sugar and sugar-producing articles of food should be prescribed; this is the most important part of the treatment. Not uncommonly a vaginal discharge is the causative agent. Under such circumstances frequent and copious douching with a saturated solution of boric acid should accompany the local treatment. When oozing is present, lotions and dusting powders are to be used rather than ointments, and when itching is a prominent symptom, as it so frequently is, a most useful lotion is the borax and menthol lotion already described, followed by the liberal application of a dusting powder containing bismuth and talc. When the acuteness of the inflammation has subsided and the parts are no longer moist, a paste containing twenty grains (1.30) of calomel with ten to fifteen grains (0.65 to 1.0) of phenol to the ounce (32.0) may be applied two or three times a day. Special pains should be taken to keep the parts clean by the liberal use of some bland oil like olive oil or cosmoline, since decomposition readily takes place in this region.

In eczema of the scrotum, when the parts are oozing, the thighs and scrotum should be kept apart by the interposition of two or three layers of gauze sprinkled with a dusting powder of talc and the salicylate or subgallate of bismuth. Ointments used in this region should have as a base some mineral fat such as cosmoline. If made with lard or other animal or vegetable fat they very readily become rancid, irritating, and ill-smelling through decomposition.

In eczema of the anus much the same remedies are to be employed as about the genitalia, but owing to the heat and moisture always

present in this region, and to the occasional extension of the inflammation within the sphincter, the difficulties in the way of successful treatment are many. The itching, which is apt to occur paroxysmally, is at times atrocious and always demands relief. A lotion which I have often found most useful is the following:

℞
Liq. carbonis detergentis .....f℥ i (32.0)
Glycerini .....f℥ ss (16.0)
Aq. camphoræ .....q. s. ad f℥ iv (120.0)
M. et adde
Phenolis .....℥ss (2.0)
Sig. Shake thoroughly and mop on three or four times a day.

This lotion may sometimes be usefully modified by substituting menthol for the phenol in the proportion of a half a grain (0.03) to the ounce (32.0), and by using lime water instead of camphor water. A menthol and salicylic acid paste containing three to five grains (0.20 to 0.30) of the former and ten grains (0.65) of the latter to the ounce (32.0) often acts admirably in relieving the itching. If the parts are much inflamed, the proportions of the menthol and salicylic acid may be reduced one-half. For the relief of the pruritus within the sphincter, ointments made up with lanolin should be used, as the ordinary fatty bases not mixing with water are comparatively ineffective upon moist mucous surfaces. In cases which have resisted the ordinary local applications, the X-ray may be tried; this sometimes affords marked relief to the intolerable itching.

In the treatment of eczema of the legs, one of the commonest local varieties, the same lotions, ointments, and pastes are to be employed as elsewhere, but owing to the dependent position of the parts and the frequent association of varicose veins with the eczema, certain auxiliaries, such as the roller bandage, or, what is much more efficient, the elastic bandage, are to be employed. In acute forms occurring in this locality and in the acute exacerbations of the chronic variety, nothing can take the place of rest and elevation of the limb; and when the inflammation is severe, especially if it is accompanied, as is often the case, by œdema, these should be insisted upon. In the subacute and chronic forms, when the patient is obliged to be about, a bandage of elastic webbing should be smoothly applied, stretching it sufficiently in the application to make moderate, even pressure after the ointment or lotion selected has been applied. If the parts are moist, a dusting power, such as talcum, should be freely dusted over the legs before the bandage is put on. Instead of a bandage, the zinc-gelatine of Unna, the formula for which has already been given, may be applied to the leg, alone or with the addition of one or two per cent. of salicylic acid.

The chronic leg ulcer is a frequent complication of eczema of the legs which often adds much to the patient's discomfort and in-

PLATE X

Seborrhœic dermatitis (Dermatitis seborrhœica).

creases materially the difficulties of treatment. The following will be found a useful ointment in the treatment of these ulcers:

℞
Acid. salicylic. ....gr. 10 (0.65)
Emp. plumbi,
Petrolat. ....āā ℥ss (10.0)
M.

This should be spread upon lint and applied to the surface of the ulcer, first thoroughly cleansing it with a warm saturated solution of boric acid, twice a day. In these cases the elastic bandage or the zinc-gelatin is even more necessary than in uncomplicated eczema. When the ulcer is discharging an opening should be made in the gelatin after it has become firm, to permit cleansing and the application of the remedies.

Very often these ulcers are extremely painful, interfering with the patient's rest both night and day, and the author knows of no more generally useful local application for the relief of the pain than a two per cent. ointment of resorcin.

DERMATITIS SEBORRHŒICA

Synonyms.—Eczema seborrhœicum; seborrhœa corporis (Duhring); seborrhœa sicca.

Definition.—A chronic inflammatory disease of the skin occurring as red, somewhat scaly patches, often discoid or annular in shape when situated upon non-hairy parts, with a pronounced predilection for certain localities, as the scalp, sternum, and interscapular region (Plate X).

In 1887 Unna proposed to include under the title eczema seborrhœicum a number of affections of an inflammatory character more or less closely associated with the sebaceous glands, which had previously been described under a number of names, and which were regarded as separate and distinct affections. While the views of Unna have for the most part met with general acceptance, there is still some dissent from including under this term all included by Unna.

Since the conditions included by Unna under the term eczema seborrhœicum are for the most part inflammatory in character and more or less distinct from ordinary eczema, a number of authors, among them Crocker and Elliot, prefer to designate the affection dermatitis seborrhœica, a term which seems to be more appropriate than the one originally suggested by Unna.

Symptoms.—The symptoms presented by seborrhœic dermatitis vary considerably, according to the region affected. On the scalp it occurs quite frequently as a more or less marked scaliness, the scales being fatty without any very definite signs of inflammation of the underlying skin, although a careful examination of the cases which are seemingly not inflammatory will often disclose small scattered

areas in which the scalp is slightly reddened. In more marked cases the scaling may be quite abundant, the scalp red, sometimes moist and oozing slightly, with some crusting. There is usually more or less itching, and when the disease has lasted for some time the hair, which in the beginning was oily, becomes thin, dry, and brittle, the oiliness in the early stages being due to the oily seborrhœa which often accompanies the affection.

In the brows and beard, and especially in the mustache, it fre-

Fig. 31.—Dermatitis seborrhœica, sternum.

quently exists for a long period as an abundant scaling, dandruff, but here, too, just as upon the scalp, there may be present the ordinary signs of inflammation, such as redness, and, exceptionally, moisture and crusting. There is rarely, however, even in the cases which have lasted a considerable period, any noticeable thickening of the skin such as occurs in ordinary eczema. Upon the smooth or non-hairy parts of the face it occurs as ill-defined patches of fine scaling, usually accompanied by a moderate degree of redness. In the furrow between the ala of the nose and the cheek, and extending a little

distance upon the latter, the redness is often quite marked with considerable crusting, the crusts being fatty rather than dry and brittle.

Upon the trunk it exhibits a decided predilection for the sternal and interscapular regions (Fig. 31), where it occurs as rather well-defined, yellowish-red, rounded and not uncommonly annular patches, covered with small, loosely adherent, fatty scales. At times these patches exhibit a moderate amount of infiltration, although, as a rule, they are but little elevated above the healthy skin. In the mildest cases the eruption is confined to the sternum, and, less frequently, the region between the scapulæ, where it frequently exhibits a dis-

Fig. 32.—Dermatitis seborrhœica, axilla.

tinctly ring-shaped arrangement; this is the seborrhœa corporis of Duhring. In exceptional cases the entire trunk may be more or less involved, or it may be confined to the umbilical region.

The axillary (Fig. 32), the pubic, and the inguinal regions are likewise invaded at times, and in these regions, owing to the heat and moisture normally present, there is often oozing, with more or less crusting.

In children and in young adults it may occur on the upper and lower lips (Fig. 33), invading, in exceptional cases, the vermilion border of the lips, causing considerable exfoliation, or, in markedly inflammatory cases, crusting.

Unlike the ordinary forms of eczema, itching is rarely a very marked symptom, although it is usually present to a moderate degree.

As a rule, to which there are few, if any, exceptions, dermatitis seborrhœica begins upon the scalp, where it often exists for a long time as excessive scaling with few or no signs of inflammation. This early mild form of the malady is the seborrhœa capitis of some authors, but there is no doubt that it actually represents the earliest stages of what sooner or later becomes the seborrhœic eczema of Unna.

While the amount of scaling present is in most cases moderate, it may, in exceptional cases, be so considerable as to resemble to a pronounced degree patches of mild psoriasis.

Etiology.—While departures from the normal standard of health may act as predisposing causes of the affection, there is no evidence that it is the direct result of any general condition. Among local conditions which favor its occurrence are excessive heat, perspiration, friction, woollen underclothing, lack of cleanliness, or any other source of local irritation. These in predisposed individuals frequently exert a decided effect in determining the origin and spread of the inflammation. The majority of recent authors, among whom may be mentioned Unna, Sabouraud, and Elliot, are of the opinion that the affection is parasitic, and a number of microörganisms have been found which are regarded by their discoverers as the direct agent in its production. Proof is still lacking, however, that any one of these is the actual cause of the disease, although the preponderance of evidence seems to be in favor of its parasitic origin (*vid.* Seborrhœa).

FIG. 33.—Dermatitis seborrhœica (involving mucous membrane of the lips as well as the skin).

Pathology.—The histological changes found in dermatitis seborrhœica are, for the most part, such as are present in the milder forms of eczema. There is a disturbance of the process of keratinization (parakeratosis), parenchymatous and interstitial œdema of the rete, the latter usually much less marked than in ordinary eczema, and a moderate acanthosis (thickening of the rete). A moderate amount of cellular exudation is usually present in the papillary layer of the corium about the vessels and in the neighborhood of the coil-glands. Fat in varying amount is present in the epidermis, and less frequently in the corium, according to Unna, who finds the origin of the increased fat secretion in the coil-glands which show evidence of pathological

change, such as an increased number of mitoses in the cells lining the ducts, together with globules of fat, and proliferation of the epithelium lining the glands. This author found no changes in the sebaceous glands. Elliot was not able to confirm Unna's findings as to the infiltration of the rete and corium with fat, nor did he find fat in the coil-glands or their ducts, although degenerative changes were observed in them. Even in the mildest grades of the disease represented by pityriasis capitis and the seborrhœa of authors, Elliot found a slight cellular exudate about the vessels of the corium and the hair follicles, indicating its inflammatory character, while in the severer forms inflammatory changes were present in the entire cutis.

Diagnosis.—One of its most striking characteristics is its marked predilection for the scalp and the sternal regions. As has already been observed, it almost always begins in the former locality, spreading thence in time to other parts; such a predilection is shown by none of the diseases which may resemble it.

It is to be distinguished from eczema of the ordinary type, pityriasis rosea, ringworm, and psoriasis.

It differs from ordinary eczema by the localization already mentioned, by the usually milder degree of inflammation, the absence of any considerable thickening of the skin, and by the annular and discoid arrangement which it frequently exhibits on smooth or non-hairy parts. Itching, which is usually a very pronounced symptom in eczema, is as a rule trifling.

Pityriasis rosea and dermatitis seborrhœica may resemble each other quite closely, but the former is an acute affection, shows no special tendency to occur in the face or over the sternum; indeed, it is unusual in the former region. In the former the scaling is fine and dry; in the latter, fairly abundant and fatty.

Ringworm of non-hairy surfaces may at times resemble it, but the rapid extension of the patch and its speedy transformation into a ring, the fine dry scales in which the trichophyton fungus is readily demonstrated, are features which easily distinguish it from seborrhœic dermatitis.

When the disease occupies a considerable portion of the trunk and scalp and the scaling is unusually abundant, it may resemble the milder forms of psoriasis, but in the latter the patches are usually much more sharply circumscribed, the scales are dry, white, laminated, and much more abundant. The two diseases affect different regions, psoriasis occurring especially upon the extensor surfaces of the extremities and particularly on the elbows and knees, while, as already noted, seborrhœic dermatitis affects especially the sternal and interscapular regions. There is likewise decided infiltration of the patches in psoriasis, while in seborrhœic dermatitis this is trifling, if present at all.

Prognosis.—As a rule, the malady yields quite readily to judicious treatment, but relapses are common.

Treatment.—Internal remedies are rarely, if ever, indicated in treatment. If, however, the patient is anæmic or debilitated from any cause, tonic remedies and such as tend to improve the general nutrition, such as iron, strychnia, arsenic, or cod-liver oil, may be given.

The local treatment will vary somewhat, according to the region affected. In the dry, scaly form affecting the scalp a lotion of resorcin containing from ten to fifteen grains to the ounce of equal parts of alcohol and water, with a few minims of glycerin, will often prove an effective remedy. Should this be found too drying, an ointment of resorcin, two to three per cent., may be substituted for the lotion. In cases in which a moderate degree of inflammation is present, an ointment containing twenty grains of ammoniated mercury to the ounce is often most useful, first removing any crusts that may be present, either with soap and water or with vaseline. Weak sulphur ointment, ten to twenty grains to the ounce, is often an effective remedy, but it should be used cautiously at first, as it occasionally irritates. In mild forms affecting the sternal and interscapular regions, nothing is more effective than the zinc sulphide lotion with ten or fifteen minims of glycerin to the ounce.

℞

Zinci sulphat.,
Potas. sulphuret. .....āā gr. xl (2.60)
Glycerini 3i (4.0)
Aq. .....ʒiv (108.0)

Mix.

Sig. Shake and apply twice a day.

When there is marked inflammation, this lotion is contra-indicated; instead a lotion of resorcin containing from five to ten grains (0.32 to 0.65) to the ounce (32.0) of equal parts of lime water and water will be found useful. In the cases which approach in type ordinary eczema the treatment is practically the same as for that affection.

HERPES SIMPLEX

Synonyms.—Herpes; "cold-sore"; fever blister; Fr., Herpes vulgaire; Ger., Bläschenflechte.

Definition.—An acute inflammatory disease of the skin distinguished by one or more groups of small vesicles on an inflamed base, situated, in most instances, in the face or upon the genitalia (Plate XI).

Symptoms.—Two varieties of herpes occur which differ from each other chiefly in the regions involved, their symptoms being much the same. One variety occurs in the face, hence is known as herpes facialis (herpes labialis, herpes febrilis, cold-sore); the other affects the genital region, the penis in the male, the labia in the female.

Herpes Facialis (Fig. 34).—Facial herpes is distinguished by one or more usually quite small groups or patches of pin-head to split-pea-sized vesicles seated upon a reddened area situated at one corner or other of the mouth, upon the lips at the mucocutaneous junction,

PLATE XI

Herpes simplex.

and extending upon the skin, upon one ala or other of the nose, or, less frequently, upon one cheek, or the ear. Frequently there is but a single patch, but often there are two, three, or more, each containing from four or five to a dozen or more small vesicles filled with transparent serum, which soon becomes cloudy and sometimes purulent. Exceptionally the patches are comparatively large, and may contain small blebs formed by the coalescence of several vesicles when these are closely crowded together. In the course of three or four days the vesicles dry up, forming yellowish crusts, which fall off at the end of a week, leaving a reddish, sometimes faintly brownish, stain which soon disappears. The appearance of the eruption is usually preceded by a feeling of local heat or itching for some hours. In a considerable proportion of cases the eruption is preceded and accompanied in its early stages by slight malaise, some elevation of temperature, and chilliness, hence the name "fever blister," "cold-sore," by which it is commonly known; or there may be slight gastric disturbance.

Fig. 34.—Herpes simplex facialis.

Although the vast majority of cases of simple herpes occur upon some part of the face, it may also occur upon other parts, such as the trunk or extremities, and in exceptional cases upon the mucous membranes of the lips, the tongue, the cheeks, pharnyx, or larynx.

In a considerable number of cases it exhibits a remarkable tendency to recur, often in the same situation, at intervals of some months. It is fairly common to see this recurrent type in children, in whom it is apt to occur upon the cheek two or three times a year for a number of years. The author has had under his observation several cases in adults in which a patch of vesicles recurred every few months upon the buttock, and Sequiera and Adamson have made similar observations.

An epidemic form of herpes has been described by Savage, Seaton, and others in which there was marked elevation of temperature, 102° or 103° F., accompanied by patches of vesicles in the face, or upon the ears. In the epidemic reported by Savage the fever lasted four days, and the attack was attended by great prostration.

A few cases of generalized herpes have been reported, but the diagnosis in some of these is open to doubt.

Herpes Progenitalis.—In this variety of herpes the eruption is situated upon the inner surface of the prepuce, the glans, or, much less

frequently, upon the shaft of the penis in men and upon the inner surface of the labia, the prepuce of the clitoris, exceptionally upon the cervix uteri, occasionally upon the skin of the vulva, and at times upon the inner surface of the thigh adjoining, in women. As in facial herpes, the appearance of the eruption is preceded by burning or itching, sometimes pain, but malaise and fever, which are so common in facial herpes, never occur. Upon the mucous surfaces the vesicles are not transparent, as upon the skin, but appear as small white opaque elevations, which are soon transformed into small shallow erosions or ulcers; but when situated upon the shaft of the penis, the vulva and thighs they present the same appearances as when situated upon other parts of the skin, and after a time dry up into small crusts. The number of vesicles is usually small upon the prepuce and the glans—there may not be more than two or three—but occasionally patches of considerable size are present, varying in number from a single one to three or four, and containing a considerable number of vesicles. When irritated, as frequently happens, from injudicious treatment, especially in men, considerable swelling, with inflammatory induration of the part upon which the vesicles are seated, and occasionally ulceration with swelling of the inguinal glands, may occur. The subjective symptoms are usually trifling in the male, but in women, in whom it is apt to occur at the menstrual period, the amount of burning and pain may be considerable. Recurrences are extremely common, much more so than in the facial variety.

Etiology.—There is an extraordinary variation in individual susceptibility to facial herpes. In certain individuals it is extremely common, the slightest indisposition, a coryza, or a trifling indigestion being sufficient to produce it, while others never, under any circumstances, suffer from it. In certain individuals certain articles of food may produce it. The author has knowledge of a case in which the eating of cheese in the evening is sure to be followed by a labial herpes next morning. It is a common symptom in certain acute general infections, such as malaria, pneumonia, epidemic cerebrospinal meningitis, and, exceptionally, in typhoid fever. Its occurrence is commonly regarded as a favorable omen in these affections, but it is doubtful whether it has any prognostic significance.

Genital herpes is frequently, but by no means always, preceded by some venereal affection, such as gonorrhœa or the venereal ulcer, and is quite common in prostitutes. In men predisposed to it coitus is a frequent exciting cause, and it may follow every coitus. In women it is apt to occur at the menstrual period and may be the cause of much distress.

Pathology.—Herpes is, in all probability, a toxic neuritis affecting the terminal filaments of a branch of a cutaneous nerve, and it is extremely probable that a variety of toxic substances may cause it. Its occurrence after certain foods or drugs, and its association with

certain general infections, such as have already been referred to, certainly afford much support to such a view.

There is a fibrinous inflammation of the upper portion of the epidermis terminating in a coagulation necrosis of the epithelial cells. The papillæ immediately beneath the vesicle are œdematous, their vessels and lymph spaces dilated, and the former surrounded by a considerable exudation of leucocytes.

Diagnosis.—The recognition of *facial herpes* is usually very easy. The arrangement of the vesicles in one or more well-defined groups; their situation about the mouth and the alæ nasi; the absence of marked itching; the acute course of the eruption, and the frequent history of repeated recurrences, are features which distinguish it from acute vesicular eczema. The absence of neuralgic pain and of any definite relation to nerve-branches will serve to distinguish it from herpes zoster, which is very unusual in the regions affected by simple facial herpes. When simple herpes occurs elsewhere than upon the face there may at times be difficulty in differentiating it from a mild zoster with a single patch.

When the patches have crusted they may bear some resemblance to impetigo contagiosa, but the peripheral spread of the vesico-pustules of the latter, their thin, wafer-like crusts, and the appearance of new lesions at short intervals, often from auto-inoculation, soon differentiate the two affections.

Herpes occurring upon the *prepuce* (herpes præputialis) is most likely to be confounded with the venereal ulcer, or with the initial lesion of spyhilis. In the early stages there is commonly no difficulty in distinguishing the herpetic eruption from these—the vesicular character of the lesions and their number are features quite characteristic of the former—but when, through irritation of any kind, such as frequent coitus, or, more commonly, the application of irritant or caustic substances, often by the patient himself, the lesions inflame and ulcerate and their bases become swollen and hard, there may be some difficulty in arriving at a definite conclusion. Under such circumstances, owing to the very serious results which may follow an error in diagnosis, sexual intercourse should be forbidden until a positive diagnosis has been made. In doubtful cases examination of the secretion from the ulcerating surface for the spirochætæ, by dark-ground illumination or the Burri India ink method, should not be omitted. Since the inguinal lymphatic glands may be swollen in those cases in which the herpetic lesions have been irritated, as well as in chancre, too much importance should not be laid upon the presence or absence of such swelling in the differential diagnosis.

Prognosis and Treatment.—An attack of herpes usually runs its course in about a week to ten days, but, as already noted, recurrences, especially in the genital forms, are common and often the source of much annoyance.

In the ordinary forms of facial herpes, one of the most effec-

tive local applications is undiluted alcohol gently mopped on with a pledget of absorbent cotton, three or four times a day, for a few minutes at a time, followed by a dusting powder of talc and oxide of zinc or subcarbonate of bismuth. When crusting has occurred, a weak ointment of calomel or ammoniated mercury may be applied once or twice a day until healing is complete. In herpes progenitalis the same alcoholic lotion may be employed, followed by a dusting powder composed of equal parts of talc and boric acid. Ointments should not be used about the genitalia as a rule. When the eruption is on the mucous surfaces, the opposed surfaces should be kept apart after the liberal application of the dusting powder by a thin layer of plain gauze. Astringent lotions containing small quantities of tannic acid, sulphate of zinc, or acetate of lead may also be used.

For the prevention of recurrences in genital herpes, strict cleanliness should be observed, washing the parts daily, and especially after coitus, with a saturated solution of boric acid. The diet should be regulated and the avoidance of spirits, wines, and malt liquors should be advised. In cases in which the prepuce is long, circumcision should be performed. Moderate doses of arsenic administered over a considerable period are sometimes of service. Notwithstanding the best directed efforts, the prevention of recurrences is oftentimes a matter of considerable difficulty.

HERPES ZOSTER

Synonyms.—Zoster; zona; shingles; Ger., Gürtelausschlag; Gürtelrose.

Definition.—An acute inflammatory disease of the skin characterized by an eruption of vesicles arranged in groups, seated upon an inflammatory base, distributed over the course of a nerve.

Symptoms.—It usually begins with some degree of pain in the region about to be the seat of the eruption, the amount varying from slight hypersensitiveness to severe neuralgia. Exceptionally there is elevation of temperature, with headache and malaise. After a period varying from a few hours to a day or two, or, in a considerable proportion of cases, without prodromal symptoms, variously sized erythematous, ill-defined patches appear, on which are shot-sized papules, which speedily become vesicles with clear contents. With the appearance of the eruption the pain often becomes less, but not invariably so. New vesicles continue to appear for several days, while the contents of the older ones become turbid, purulent, and occasionally hemorrhagic. Unlike the vesicles of eczema, as well as some other inflammatory affections, those of zoster show no tendency to spontaneous rupture, but dry up into yellow or blackish crusts, which after a week or ten days fall, leaving a slight transient pigmentation, and in the severe cases more or less permanent scarring. Quite commonly the lymphatic glands in the neighborhood of the eruption are somewhat enlarged.

The number and size of the patches of eruption vary according to the locality attacked and the severity of the attack. There may be but a single patch in very mild cases, although this is unusual, or there may be a half dozen or more, as when the eruption occurs over the distribution of the brachial plexus. Each patch may contain from five or six small vesicles to large numbers, and in the severe cases blebs of various sizes may form by the coalescence of closely adjacent vesicles. In certain regions the patches may be so large and so close together that they coalesce to form one large area covered by the eruption. The contents of the vesicles are usually clear or slightly turbid serum, but they may be bloody (zoster hemorrhagicus). The inflammation may be so violent that it eventuates in gangrene, and instead of crusts of black eschars of varying size and depth are formed (zoster gangrænosus). In very mild cases a number of the lesions abort in the papular stage and disappear within a few days.

In the vast majority of cases the eruption is unilateral; quite exceptionally it is bilateral, and in very rare instances may be more or less general.

Tenneson, Leredde, and other French observers have called attention to the frequent occurrence of scattered vesicles some distance from the principal eruption, but usually on the same side. Tenneson asserts that these may be found in nine out of every ten cases of zoster, and Crocker's observations led him to the same conclusion.

The amount of pain varies greatly. In children it is very commonly absent altogether or trivial. In young and middle-aged adults it may or may not be present, and varies from slight uneasiness with burning to intolerable neuralgia. In the elderly and old more or less neuralgic pain is the rule.

The attack in ordinary cases terminates after a course of ten days to three weeks, but when there has been deep ulceration or gangrene two or three months may elapse before recovery is complete. In a considerable proportion of cases various disturbances of sensation, such as burning, formication, or actual neuralgia, may persist for months, even many months, after the disappearance of the eruption. This is especially apt to be the case in old subjects.

In the great majority of cases but a single attack occurs during the patient's lifetime. A number of cases, however, have been reported in which not one but many recurrences were observed. Kaposi observed a case in which nine relapses occurred, and some years ago the author had under his own observation an elderly man who had many attacks at intervals, varying from a few weeks to several months, all in the distribution of the sciatic nerve and its branches. As a rule, cases of recurrent zoster are the result of traumatism or are secondary to disease in the immediate vicinity of the nerve affected. In the author's case above referred to the malady followed a fracture of the femur.

A number of clinical varieties are commonly recognized which are

designated chiefly according to the regions they occupy or the nerves involved. The principal varieties are zoster ophthalmicus, occurring in the region of distribution of the ophthalmic branch of the fifth pair; zoster capillitii, affecting the scalp; zoster frontalis, occurring on the forehead over the supraorbital branch of the fifth pair; zoster brachialis, occurring over the distribution of the brachial plexus; zoster pectoralis, occupying the side of the thorax, the "shingles" (Fig. 36), of the laity and one of the commonest forms of the disease; zoster lumbo-abdominalis, over branches of the lumbar plexus; and zoster femoralis, in the distribution of the sciatic nerve. These several varieties, with one or two exceptions, present no essential differences in their symptoms.

In **zoster** occurring over the several branches of the fifth pair, the inflammatory symptoms are occasionally of unusual severity and

FIG. 35.—Herpes zoster. Unusual location.

may be accompanied by great pain. The eruption may occur upon the conjunctiva and cornea, in the latter leading at times to perforation, with serious impairment of vision. The inflammation, in rare cases, may extend to the retina, or to the meninges with a fatal result. Vesicles may also occur upon the nasal, buccal, lingual, and palatal mucous membranes.

In **frontal zoster** several small patches, or, in severe cases, one large patch of vesicles which are often of large size and deep-seated, are distributed over the supraorbital nerve from the brow to the margin of the scalp, and often well within the hair, stopping abruptly at the middle line. This variety is frequently followed by very marked and extensive scarring.

In **facial zoster,** an unusual variety, the eruption is at times accompanied or followed by facial paralysis.

In zoster over the brachial plexus and its branches (zoster brachialis, zoster cervico-brachialis) there are numerous patches of vesicles distributed on the side of the neck in the clavicular and scapular re-

gions, over the anterior surface of the arm, extending to the wrist (Fig. 35), but very rarely upon the hand. Patches also occur upon the outer surface of the upper arm.

Thoracic zoster, zoster pectoralis, "shingles," is by far the most frequent form of the affection. In cases of ordinary severity there are, as a rule, three well-defined patches, one close to the spinal column, a second in the axillary line, and a third in the mammary line. Occasionally one or other of these is abortive, consisting of a small

FIG. 36.—Thoracic herpes zoster (shingles).

erythematous patch, in which are a few small papules or two or three vesicles, or it may be absent altogether. On the other hand, the eruption may be so abundant that there are no discrete patches, but a wide band of vesicles and blebs extending from the middle line in front to the spinal column in the back.

In lumbo-abdominal zoster the eruption is situated in the gluteal region, on the lower part of the abdomen, in the inguinal region, and on the inner and upper part of the thigh.

In femoral zoster there are patches of eruption on the outer and inner surface of the thigh, occasionally upon the genitalia, and down the posterior surface of the thigh to the knee, but rarely on the leg.

Etiology.—Herpes zoster is most common in the second and third decades of life, and although no age is entirely exempt, it is rare in very young children and in infants. Sex is apparently without influ-

Fig. 37.—Herpes zoster arsenicalis—lichen planus. Patient had a lichen planus, shown on the flexor surface of the wrist, for which he had been taking Fowler's solution.

ence upon its incidence. It is much more common in the spring and fall than in other seasons of the year. Certain poisonous substances, such as carbon dioxide or carbon monoxide (coal gas), have been known to cause it, and, as was pointed out by the late Sir Jonathan Hutchinson, it may follow the administration of arsenic (Fig. 37).

It occasionally occurs in connection with certain infectious diseases of the nervous system, such as epidemic cerebrospinal meningitis, or tubercular meningitis. Traumatism of various kinds may produce it; cases have been observed to follow a blow, the extraction of a tooth, or a hypodermatic injection. Quite recently a number of instances have been observed in which it was associated with renal colic following hydronephrosis or nephrolithiasis (Bittorf, Rosenberg).

Although the infecting agent has not yet been demonstrated, there is little or no doubt that the idiopathic form of the malady—that is, that form which is not secondary to traumatism or the result of the ingestion of toxic substances, such as arsenic—is the result of an infection. The self-limited course, the immunity conferred by an attack, its occurrence in epidemics, are features which are best explained by this theory.

Pathology.—Herpes zoster is essentially an interstitial inflammation of the posterior root ganglia of the spinal nerves, and less frequently of the peripheral portion of the nerves. While in most instances it is a descending neuritis, there is no doubt that in the cases following traumatism the inflammation is seated in the peripheral portion of the nerve. Head and Campbell found hemorrhage in the posterior root ganglia, or inflammation and degenerative changes in the peripheral branches connected with such ganglia.

The vesicle of herpes zoster is usually situated in the middle and lower portion of the epidermis, but it may lie between the epidermis and the corium, this being usually the case in the severer forms of the affection, such as attack the regions supplied by the fifth pair of nerves; and this in part accounts for the scarring which is so frequent a sequel of this variety of the disease. In the beginning there is a marked intercellular œdema, the epithelial cells are widely separated, lose their prickles, are often greatly increased in size, and become globular or balloon-shaped, their protoplasm becoming homogeneous and staining readily with acid dyes. These large, round and pear-shaped cells contain a large, frequently double-walled, cavity in which are from two or three to twenty or more large nuclei, so that they may resemble certain forms of protozoa (Fig. 38), and they were regarded, especially by Pfeiffer, as parasitic bodies, but the studies of Unna, Gilchrist, and the author have proved that they are nothing more than epithelial cells which have undergone a peculiar form of degeneration, the "ballooning colliquation" of Unna. A similar form of degeneration is observed in some other vesicular affections, such as variola and varicella. In the papillæ and upper part of the corium there is a varying degree of leucocytic infiltration, with dilatation of the vessels, and in hemorrhagic cases a varying number of red blood-cells. In a considerable proportion of cases of the severer type the papillæ of the corium undergo necrosis, in consequence of which permanent scarring results.

Diagnosis.—The clinical symptoms of herpes zoster are in most cases so characteristic that it is readily distinguished from other vesicular eruptions. The grouped arrangement of the lesions, their situation over well-defined nerve areas, the absence of oozing, the frequent presence of pain, either preceding or accompanying the appearance of the eruption, serve to distinguish it from vesicular eczema, for which it is sometimes mistaken.

The affection with which it is most apt to be confounded is simple herpes, especially when there are but one or two groups of lesions. But the neuralgic pain, the situation of the eruption, and a history of repeated attacks in the simple form will serve to distinguish the two affections from each other. Cases occur, however, in which it is not easy to say whether we have to do with an anomalous zoster or a simple herpes.

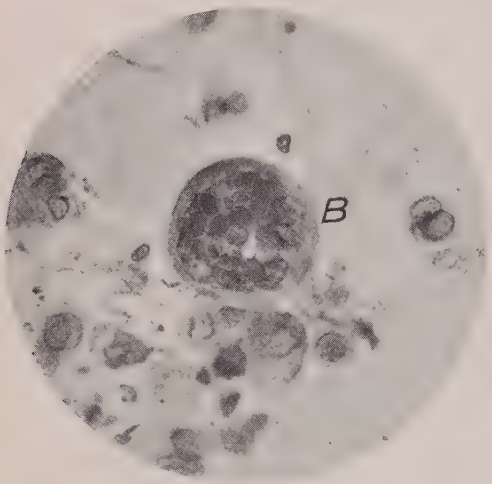


Fig. 38.—Herpes zoster. "Ballooned" epithelial cells; the large one in the centre filled with nuclei resembling a protozoön.

Prognosis.—In the great majority of cases recovery takes place in the course of two or three weeks without sequelæ. In the hemorrhagic and gangrenous forms of the malady, however, recovery is often greatly delayed, and marked and permanent scarring may result. In ophthalmic zoster impairment of vision, destruction of the eye, and, in rare instances, even death from sepsis or meningitis, may result. In elderly and old subjects persistent neuralgia and annoying disturbances of sensation may follow and continue for many months.

Treatment.—Since we possess no remedy, either external or internal, which influences the course of the affection, which is a self-limited one, the treatment of mild cases in which there is but little or no pain may be limited to the protection of the eruption by the liberal application of a dusting powder, such as equal parts of talc and oxide of zinc, or subcarbonate of bismuth, to which have been added fifteen or twenty grains (1.0 or 1.30) of powdered camphor to the ounce (32.0). After the application of such dusting powder the affected part should be covered with two or three layers of gauze or a layer of cotton wadding. In cases in which pain or itching and burning accompany the eruption, alcohol, either alone or containing one or two per cent. of resorcin, menthol, or boric acid, may be freely applied several times a day, followed by a dusting powder such as has been mentioned. Collodion, either alone or containing morphia, is advised by some

authors, but it is far less useful and agreeable than the alcoholic lotion just mentioned. Ichthyol in water, twenty to thirty per cent., may be applied twice a day with a camel's-hair brush. This, when dry, forms a thin brown varnish, protecting the eruption. Ointments or other local applications which soften and favor the rupture of the vesicles are to be avoided, unless the vesicles are already broken and ulceration is present.

When pain is a prominent symptom the internal administration of phenacetin, antipyrin, salicylate of soda, or salicin in appropriate doses is indicated, but in many cases nothing short of morphia by the mouth, or, better, hypodermatically, will afford any relief. Other internal remedies have been advised, such as quinine and the phosphide of zinc, the latter in doses of $^1/_{12}$ to $^1/_6$ of a grain (0.005 to 0.015) every four hours, but they are of more than doubtful efficacy. Mild galvanic currents applied to the nerve branches over which the eruption is situated are occasionally of service in relieving the pain after the acute symptoms have somewhat subsided.

In the neuralgias and disturbances of sensation, which frequently persist for months after an attack of zoster, the patient's general condition should be carefully looked after. Iron, quinine, strychnia, and small doses of some form of arsenic are all more or less useful. Cod-liver oil is frequently of service. Everything should be done to improve the patient's general nutrition by an abundance of nutritious, easily digested, and assimilable food and moderate exercise in the open air. The local use of galvinism is frequently followed by improvement, and in a few instances the author has seen prompt amelioration of the pain follow the use of the X-ray.

HYDROA VACCINIFORMIS

Synonyms.—Hydroa vacciniforme (Bazin); Hydroa æstivalis; Recurring Summer Eruption (Hutchinson).

Definition.—An inflammatory disease occurring for the most part in children, distinguished by an eruption of vesicles frequently umbilicated, occurring in summer, followed by scarring.

Symptoms.—First described by Bazin as Hydroa vacciniforme, it was again described by Hutchinson some years later as Recurring Summer Eruption. The affection begins with the appearance of small red spots, upon which isolated and discrete or grouped vesicles form, situated upon the uncovered parts of the skin, particularly the face, over the nose and cheeks, upon the ears, the upper part of the neck, less numerously upon the hands and wrists, and exceptionally upon the other portions of the body. In the course of a few days the smaller vesicles dry up, while the larger ones crust over, a certain number of them becoming distinctly umbilicated with dark-bluish or blackish centres. At the end of ten days or two weeks the crusts fall, and slightly depressed scars are left, which in the course of time may

become so numerous as to produce marked disfigurement, especially upon the ears, which may be largely transformed into cicatricial tissue. An attack usually comes on after exposure to the sun, and may be preceded by slight malaise, with loss of appetite; it lasts from two or three weeks to a month or two. The affection occurs for the most part in the summer, but may occur in the early spring and late autumn.

Etiology and Pathology.—The malady begins, as a rule, in the first, second, or third year of life, but has been noted in a considerable proportion of cases in later childhood. Exceptionally it has been seen in adults, as late as twenty-six years of age (Boeck). It was formerly supposed to attack males much more frequently than females, but more extended observation has shown that its incidence in the two sexes is practically the same. The eruption follows direct exposure to the sun and wind, and, as already observed, occurs for the most part in the summer season, although one of Crocker's cases was always worse in cold weather.

In a considerable proportion of the reported cases hæmatoporphyrinuria was present (cases of McCall, Anderson, Linser, Möller, Rausch, and Ehrmann); and this fact, together with the results of the experimental studies of Hausmann, which demonstrated that hæmatoporphyrin exercises a pronounced photosensitizing effect upon the skin, making it abnormally sensitive to light, makes it seem extremely probable that this substance plays an important, if not the chief, rôle in the production of the eruption.

According to Bowen, the disease begins with an inflammation in circumscribed areas of the epidermis and upper part of the corium, which results in the formation of vesicles in the rete. In advanced lesions there is necrosis of the epidermis and of the corium to a considerable depth. The dark centre of these lesion is due to the presence of hemorrhagic foci in the necrotic areas.

Diagnosis.—The early appearance of the malady, in childhood, its limitation to uncovered portions of the body, its occurrence chiefly in the summer season, the vacciniform character of many of the lesions, and the scarring which follows the eruption, are features sufficiently characteristic to differentiate it from other vesicular eruptions.

Prognosis and Treatment.—The affection shows a tendency to diminish in severity as puberty is approached, and finally disappears when maturity is reached. As already observed, considerable disfigurement may result from scarring when the lesions are numerous.

As a prophylactic measure the patient should avoid as much as possible exposure to the sun and wind. In the summer season a brown veil and gloves should be worn when outdoors.

Irritant applications should be avoided. A saturated solution of boric acid containing a small quantity of glycerin may be mopped on several times a day, or calamine lotion applied in the early stages of the eruption. When crusting has taken place a two per cent. oint-

ment of carbolic acid may be applied twice daily until the crusts have fallen.

The affection which Hutchinson described under the name Summer Prurigo, Prurigo Æstivalis, is probably a variant of Hydroa Vacciniformis. It is distinguished by an eruption of pale red papules situated on the face and hands which is always much worse in the summer season and disappears in large part or wholly in the winter. Severe itching accompanies the eruption, which is followed at times by scarring. Like hydroa, it tends to disappear in adult life, although it may persist in rare cases, according to Hutchinson, throughout the patient's lifetime.

Unna's hydroa puerorum is regarded by most authors as identical with hydroa vacciniformis, but Haase and Hirschler maintain that it is an independent affection, and do not accept Unna's view that it is a mild form of dermatitis herpetiformis occurring in children.

POMPHOLYX

Synonyms.—Cheiropompholyx (Hutchinson); Dysidrosis (Tilbury Fox).

Definition.—An acute inflammatory disease characterized by an eruption of vesicles and blebs, chiefly on the palms, and, less frequently, the soles.

Symptoms.—This affection was first described by Tilbury Fox, in 1873, under the name dysidrosis, and a little later by Jonathan Hutchinson as cheiropompholyx. It is distinguished by an eruption of deep-seated vesicles situated upon the palms and sides of the fingers, which, at first discrete and filled with a clear fluid, later becomes turbid. As new vesicles appear, they occasionally form irregular groups and may coalesce to form blebs from a half inch to an inch in diameter. It is, as a rule, symmetrical, but it may be confined to one side, and while often limited to the hands it may occasionally occur upon the soles and toes, in which region it is usually less severe than upon the hands. In a small proportion of cases, through secondary infection, the vesicles are transformed into pustules and the blebs are filled with purulent fluid; in these cases there is decided redness and marked swelling of the hands and considerable pain. The vesicles, unlike those of eczema, do not readily rupture, and are quite firm to the touch. In the course of ten days to two weeks the contents are absorbed and the elevated epidermis exfoliates, leaving a dry, reddened surface, or, much less frequently, instead of drying up, an eczematous condition follows, which may prolong the affection for some weeks. With the development of the eruption, and sometimes preceding it for a short time, itching and burning of varying intensity appear, and less frequently pain accompanies it. The disease varies much in intensity; in the mildest cases there many be only a few small vesicles scattered along the sides of the fingers, with a few in the palms, while in the severest the palms and occasionally the back of the hands, the soles, and the toes may

be covered with numerous vesicles and variously sized blebs (Fig. 39). In a large proportion of the cases there is a more or less well-marked palmar and plantar hyperidrosis which may precede or accompany the eruption. Recurrences are common, usually at intervals of some months, but occasionally at shorter intervals. In a few instances an eruption resembling miliaria, accompanied by itching, occurs upon the extremities coincidentally with the eruption upon the hands (Tilbury Fox).

Etiology and Pathology.—The malady is seen chiefly in adults and is uncommon in childhood and old age. It is decidedly more frequent in women than in men. As was pointed out by Tilbury Fox, and since confirmed by later observers, its subjects are for the most part

Fig. 39.—Pompholyx.

below the normal standard of health, and are often neurasthenic. Its incidence is decidedly influenced by season. It occurs for the most part, although not exclusively, in summer.

As the name he gave it indicates, Fox thought it a disease of the sweat-glands or their ducts, an opinion supported by Crocker. The studies of Robinson, Williams, and Santi, however, failed completely to demonstrate any relationship to the sweat apparatus. Williams, in a study of several hundred serial sections of vesicles, was unable to find any connection with the ducts of the sweat-glands. More recently, however, Nestorowsky, who has studied the histology anew, has announced his belief that it is a disease of the sweat-glands, and that the vesicles are closely connected with their ducts. In the beginning stage of the eruption he was unable to find any inflammatory phe-

nomena; these only appeared secondarily. Unna was able to demonstrate in all the vesicles examined by Williams and Santi, who worked in his laboratory, a bacillus about the length of the tubercle bacillus, but somewhat broader, which he believes to be the active cause of the disease, but this finding still lacks confirmation by other investigators. From all of the foregoing it is very evident that the last word has not yet been said upon the subject.

The vesicles are situated in the epidermis just beneath the horny layer. According to Robinson, there is a perivascular cellular exudate in the papillæ and upper portion of the corium, with migration of leucocytes into the rete. Unna finds no change in the papillæ except a mechanical flattening at the site of the blisters.

Diagnosis.—Pompholyx is to be differentiated chiefly from vesicular eczema and dermatitis venenata, and occasionally from eczematoid ringworm of the fingers and toes. It differs from eczema by the deep seat, the unusual firmness of the vesicles, which, unlike those of eczema, show no tendency to spontaneous rupture, and by the limitation of the eruption in most cases to the palms and soles, often to the former alone.

Dermatitis venenata is seldom limited to the hands and is usually much more acutely inflammatory than pompholyx. There is likewise a history of exposure to contact with some vegetable or chemical irritant.

Eczematoid ringworm of the hands and toes is usually a chronic affection, although there may be quite acute exacerbations. No organism is demonstrable in pompholyx, while in this variety of ringworm the *epidermophyton inguinale* is found without much difficulty.

It must be said, however, that in mild cases the differentiation from eczema is not always easy; indeed, Kaposi always maintained that pompholyx was nothing more than a vesicular eczema of the hands.

Prognosis and Treatment.—In the majority of cases the affection runs a comparatively rapid course, terminating at the end of two or three weeks, or even earlier, under appropriate treatment; but, as already observed, recurrences are common.

Since in most cases the patient's general condition is more or less below the normal, general tonic treatment is indicated. Iron, quinine, strychnia, arsenic, and cod-liver oil should be given according to the special indications present in each case, and a nutritious diet adopted.

The local treatment is practically the same as for acute eczema. In the early stages, especially when the eruption is profuse, the continuous application of a saturated solution of boric acid on lint or gauze will usually afford much relief. The blebs should be evacuated by puncture with a sterile needle, and after the acute symptoms have subsided an ointment composed of equal parts of lead plaster and petrolatum containing 2 per cent. of salicylic acid should be applied twice a day, spread upon lint. If there is much pain and itching, an ointment or paste containing two or three per cent. each of phenol and camphor will usually allay these symptoms.

DERMATITIS HERPETIFORMIS

Synonyms.—Hydroa herpetiformis (Tilbury Fox); Herpes circinatus bullosus (Wilson); Herpes gestationis (Milton); Pemphigus circinatus (Rayer); Hydroa bulleux (Bazin); Dermatite polymorphe douleureuse (Brocq).

Definition.—Dermatitis herpetiformis is a chronic inflammation of the skin characterized by a polymorphous eruption with a more or

Fig. 40.—Dermatitis herpetiformis. Erythematous and vesicular type.

less marked tendency to grouping of the lesions, accompanied by severe itching and burning.

To Duhring belongs the credit of first clearly recognizing that the varieties of this multiform affection, which had been previously described by Bazin, Tilbury Fox, and others, under a variety of names as distinct diseases, were, in fact, only variants of one disease for which he proposed the name dermatitis herpetiformis.

Symptoms.—The attack may begin abruptly or gradually, with or without constitutional symptoms, such as chilliness, fever, and loss of appetite. In severe cases with extensive eruption there is nearly always some elevation of temperature for the first few hours or for

several days. In milder cases the disease usually begins with itching and burning, which are soon followed by an eruption, the lesions of which may be all of one type—that is, either erythema, vesicles, pustules, or blebs, or a mixture of any two or of all of these. The eruption usually occupies both sides of the body, and frequently exhibits a certain degree of symmetry in its arrangement.

The erythematous type of the affection frequently presents a decided resemblance to erythema multiforme, not only in the character of lesions, but in their predilection for the regions affected by that malady.

It may begin much like an urticaria, with wheals of the usual type, but it rarely persists in this form, but eventually assumes some one of the other forms, such as the erythematous or vesicular.

The vesicular variety is the commonest and is characterized by an eruption of vesicles which are small, often irregular in shape, elongate, angular, or stellate, and are usually arranged in small irregular groups containing three to six or more lesions (Fig. 40). Not uncommonly they are arranged in distinct circles (Fig. 41), or are situated upon erythematous patches, occupying the centre of the patch. Itching is usually severe in this variety, and, in consequence, the eruption is often accompanied by numerous excoriations made by the patient's nails in the effort to obtain relief from this distressing symptom. As a result of long-continued excoriation of the skin, superficial scarring and pigmentation are frequently present in long-standing cases.

The eruption may be a purely bullous one, the blisters showing the same tendency to grouping as the other forms of the eruption, or in exceptional cases they are annular in shape (Fig. 42). This bullous variety frequently bears the closest resemblance to pemphigus.

Pustules are often present in association with other varieties of lesions, or they may exist alone, either in small, irregular groups or with a more or less marked tendency to circinate arrangement, as in impetigo herpetiformis.

In exceptional cases the eruption begins as a purely papular one and remains so until the end of the attack, but much more commonly the papules are succeeded or accompanied by vesicles or pustules.

Whatever the type of the eruption, it is apt to exhibit more or less marked multiformity, either during the attack or in subsequent outbreaks. The attack which begins with erythematous and papular lesions is pretty certain to show presently vesicles, pustules, or even blebs, or a vesicular attack may be succeeded in time by one in which the eruption is erythematous or bullous, and occasionally all the varieties of eruption are present in one and the same attack.

While most authors state that the disease may attack the mucous membranes, this is an infrequent event, much less common than in pemphigus.

The extent of the eruption varies much. In a considerable proportion of cases it consists of a few scattered patches, occupying only a limited area; on the other hand, it is frequently very abundant, occupying the trunk and extremities.

Itching is, in most cases, a very prominent symptom, giving the patient rest neither day nor night.

The malady is a markedly chronic one. It may last for months and years, even many years, exhibiting great variations in its sever-

FIG. 41.—Dermatitis herpetiformis, annular patches of vesicles.

ity, with periods of exacerbation and remission, or even complete intermission. Even in severe cases the patient's general health is fairly well maintained.

FIG. 42.—Dermatitis herpetiformis, circinate bullous type (pemphigus circinatus).

Etiology.—The immediate cause of dermatitis herpetiformis is still unknown. The theory that disturbance of the nervous system plays an important, if not the chief, part in its causation is maintained by many writers. It has been attributed to nervous shock, nervous strain, to exposure to cold, to disease of the kidneys, and to sepsis. It is somewhat more frequent in men than in women, is much less common in children than in adults, although it is seen at all periods of life.

A considerable amount of evidence has accumulated in recent years, evidence in some cases little short of proof, that various toxic substances may produce all the symptoms of the affection. In a certain small number of cases it has apparently followed the administration

FIG. 43.—Dermatitis herpetiformis (herpes gestationis), consisting of rings of vesicles. Eruption appeared with each pregnancy and disappeared at its termination.

of drugs, such as iodide of potassium (Danlos), mercury (MacLeod), and salicylate of soda (Tenneson), the eruption continuing for months or years after the taking of the drug. One variety (herpes gestationis) (Fig. 43) is intimately associated with pregnancy, a condition in which toxæmias of every kind and degree are especially prone to occur.

There is incontrovertible evidence that sepsis may produce it. In a case reported by Bogrow in which it was associated with uterine carcinoma, the eruption began to improve with the employment of vaginal douches and came to an abrupt end with the surgical removal of the necrotic cancerous tissue.

Pathology and Pathological Anatomy.—There is little doubt that dermatitis herpetiformis is a toxæmia, although the nature of the toxic substance is as yet unknown. It is more than likely that various sub-

stances of a toxic character may produce it, such substances arising within the economy as the result of abnormal metabolism, or reaching the circulation through absorption from the gastro-intestinal canal, or from some septic focus.

The changes in the skin are those characteristic of inflammation. The epidermis shows comparatively little alteration, and that usually of a secondary kind. The chief changes occur in the upper portion of the corium, where there is an abundant cellular exudation composed of lymphocytes, polymorphonuclear cells, and a considerable number of eosinophiles, situated for the most part in the papillæ, which are always more or less œdematous. The vesicles in the vesicular form are situated between the epidermis, which forms the roof, and the papillæ of the corium, and contain some fibrin and a number of polymorphonuclear leucocytes and eosinophiles. The blood likewise, in most cases, but not in all, exhibits a more or less pronounced eosinophilia, a feature upon which Leredde and some other French authors have laid great stress as characteristic of the malady; more recent studies have shown that eosinophilia is by no means confined to, or characteristic of, this affection, and it may be entirely absent, as the author's own observations have shown.

Diagnosis.—The chief diagnostic features of dermatitis herpetiformis are: (*a*) the multiformity of the eruption; (*b*) the more or less marked tendency, always present, to a grouped arrangement of the eruptive lesions; (*c*) its extremely chronic course, with remissions or intermissions; and (*d*) unusually severe itching.

The affections with which it is most likely to be confounded are erythema multiforme, urticaria, and pemphigus.

The first runs an acute course of about ten days, is rarely accompanied by any considerable degree of itching, and shows no tendency to a particular arrangement of the eruptive lesions. It must be borne in mind, however, that occasionally the resemblance between the erythematous type of dermatitis herpetiformis and erythema multiforme may be so close that a differential diagnosis can only be safely and certainly made after observing the course of the attack.

In urticaria the lesions are uniformly wheals, while in dermatitis herpetiformis other varieties of lesions are associated with the wheal sooner or later. The former is usually of short duration, running a brief course of a few days in most instances, while dermatitis herpetiformis is always a chronic malady, lasting many months or years.

The distinction between the bullous form of the malady and pemphigus is at times difficult, but the absence of multiformity in the latter and of any special arrangement of the blebs will usually serve to differentiate them. In dermatitis herpetiformis the mucous membranes of the mouth are very rarely attacked; in pemphigus blebs frequently occur in this situation. In the former, itching is a pronounced and often most distressing symptom; in the latter it is uncommon.

Prognosis.—The prognosis as to relief of the symptoms is usually favorable, but the permanent cure of the disease is generally attended

with much difficulty, relapses occurring with distressing obstinacy for months, and even years, despite the best-directed treatment. The patient's general health, however, rarely suffers to any considerable degree, although in severe cases in the aged and enfeebled a fatal termination may occur, but this is decidedly rare.

Treatment.—The constitutional treatment should be conducted on general principles, every effort being made to improve the patient's general health. The condition of the gastro-intestinal canal should receive careful attention; the diet should be carefully regulated, only easily digested and easily assimilated food being allowed. Tea, coffee, and alcohol should be avoided, or taken in very limited quantities. All sources of worry or nervous strain should be removed and avoided.

The one internal remedy of special value is arsenic given in considerable doses; small doses are of little or no use. When given in appropriate quantities there is generally a steady diminution of the eruption, with lessening of itching and a decided lengthening in the intervals between the attacks. As in pemphigus, Crocker has found salicin of almost equal value, sometimes succeeding when arsenic fails. For the relief of the frequently intolerable itching, phenacetin, acetanilid, or antipyrin may be given with good results, the last being most effective when combined with ten- to fifteen-grain (0.65 to 1.0) doses of sodium bicarbonate.

Among local remedies those which allay itching are especially indicated. The alkaline lotion containing menthol, already referred to (*vid.* Treatment of eczema), will often prove efficacious, particularly if sprayed upon the skin. Carbolic acid, one or two drachms (4.0–8.0) to the pint (500.0) of water, with the addition of twenty to thirty minims of glycerin to each ounce (32.0), softly mopped on, will often afford relief. Coal-tar as a lotion in the form of the liquor carbonis detergens, in the strength of one part to three of liquor calcis, is frequently a valuable remedy for the same symptom. Ichthyol, although a somewhat disagreeable application on account of its color and odor, is occasionally of service when employed as a lotion containing ten to twenty per cent. Other lotions which may be tried with occasional good effects are resorcin, five to ten grains (0.30 to 0.65) to the ounce (32.0) of lime water; a saturated solution of boric acid in water containing a small proportion of glycerin; liquor picis alkalinus, one or two drachms (4.0 or 8.0) to the pint (500.0) of water. In some cases much relief follows a bran or gelatin bath taken before retiring.

Duhring recommended the application of sulphur ointment, especially in very chronic cases, thoroughly rubbing it in, but this is too irritating a remedy to be generally used. Equal parts of cold cream and lanolin containing 0.5 per cent. of menthol will sometimes be found a very effective remedy for the itching.

In the bullous variety of the disease the local treatment is much the same as in pemphigus. Blebs should be evacuated and a dusting powder composed of equal parts of talcum powder and powdered boric acid should be liberally applied two or three times a day.

IMPETIGO HERPETIFORMIS

Definition.—An inflammatory affection of the skin characterized by a pustular eruption arranged in groups or patches, accompanied by pronounced constitutional disturbance, terminating, with rare exceptions, fatally.

Symptoms.—This very rare disease, of which only a little more than a score of cases have been reported since it was first described by Hebra, in 1872, begins with the appearance of patches of pin-head to split-pea-sized flat pustules situated upon the inner surface of the thighs, in the groins, about the umbilicus, over the breasts, and in the axillæ. The pustules, seated upon an inflammatory base, within two or three days dry into brownish crusts beneath which the skin may speedily be covered with new epidermis or may remain red and oozing. About the borders of the crusts new pustules continue to appear, and annular patches are thus formed, which continue to enlarge and frequently coalesce with neighboring ones until large areas, or even the greater part of the cutaneous surface, are covered.

The eruption is attended by more or less elevation of temperature of an intermittent character, a rise sometimes with chills preceding and accompanying each new crop of pustules. The lingual, buccal and pharyngeal mucous membranes are also at times affected. Small superficial pustules, which speedily become shallow erosions by maceration, appear upon the tongue, the cheeks, and in the pharynx. More or less itching and burning accompany the eruption and are at times a source of great discomfort. As the malady progresses the patient becomes more and more enfeebled; severe chills with high temperature, reaching 104°–105°, occur at irregular intervals with vomiting and a diarrhœa, stupor or coma supervenes, and death occurs after a few or several months' duration.

Etiology and Pathology.—The great majority of the cases reported have occurred in pregnant or parturient women; a few have, however, been observed in non-pregnant women (the author's case, with a few others) and a few likewise in men (Kaposi, Dubreuilh, Whitehouse, Chambers). The primary cause of the disease is unknown, but its close and undoubted connection with pregnancy suggests very strongly that it is a toxæmia. Scheuer, who would reject all cases not occurring in pregnant women as not conforming strictly with the Hebra type, has recently put forward the theory that it is due to a toxin formed in the placenta, but this theory is as yet unsupported by reliable evidence.

The pustules have, for the most part, been found sterile, although staphylococci were present in a few instances. Du Mesnil found a well-circumscribed exudate of leucocytes in the papillæ immediately beneath the pustule so dense as to completely obscure the line of demarcation between the papillary body and the epidermis. The vessels of the papillæ were also dilated. The small pustules were quite superficially situated in the epidermis, their roof being formed by the horny layer alone; the larger lesions were deeper seated. These find-

ings have been confirmed by Dubreuilh and others who have studied the histopathology of the affection.

Diagnosis.—The disease with which it is most likely to be confounded is dermatitis herpetiformis, which it may resemble more or less in a number of its features, but it is usually readily differentiated from that affection by the uniformly pustular character of the eruption, the presence of more or less pronounced constitutional disturbance, and its occurrence almost exclusively in pregnant or parturient women.

Prognosis and Treatment.—The prognosis is most unfavorable, but two recoveries being recorded. The duration varies from one or two to several months and if the patient survives the first attack she almost invariably succumbs to a second or third.

The treatment is to be conducted on general principles. Internally, quinine in considerable doses, stimulants and an abundance of easily assimilable nourishment are indicated. The eruption should be kept well covered with a dusting powder of talc and boric acid applied often enough and abundantly enough to keep the parts dry. In a few instances the continuous water-bath has been useful.

PEMPHIGUS

Synonyms.—Fr., Pemphigus; Ger., Blasenausschlag.

Definition.—An acute or chronic inflammatory disease of the skin characterized by an eruption of blebs or blisters appearing in successive crops, frequently, but not invariably, accompanied by constitutional symptoms of varying intensity.

There has been, and is yet, considerable divergence of opinion among authors, especially in recent years, as to just what should be included under the term pemphigus. The older authors included a much greater variety of bullous diseases under this term than the recent ones. With the general acceptance of the disease described by Duhring under the name dermatitis herpetiformis as a distinct clinical entity, it seemed for a time as if the term was about to disappear from dermatological nomenclature, especially among the French. The bullous affections formerly described as pemphigus were largely regarded as varieties of dermatitis herpetiformis. In consequence of the vigorous discussion carried on during the past quarter of a century, the application of the name has been greatly restricted.

It is not to be supposed that every disease presenting bullæ is of necessity pemphigus. Such lesions occur with great frequency in various inflammations of the skin, such as dermatitis venenata, erysipelas, and certain cases of erythema multiforme, but these lack the uniformity of lesion, the chronicity of course, and the frequently grave constitutional symptoms which distinguish true pemphigus.

As our knowledge of the etiology and pathology of the bullous affections of the skin becomes more extensive and exact, there will doubtless be a still further limitation of the term. There still exists a certain

group of eruptions, of which the most striking feature is the formation of bullæ, in which the symptoms and course are of so uniform a character as to justify the retention of this term for them.

Several varieties of pemphigus are recognized, which, while presenting certain features in common, yet differ to a greater or less degree in their symptoms, course, and mode of termination. Whether these several varieties simply represent variants of one and the same affection, or are in reality distinct diseases due to different causes, is yet a moot question.

The commonly recognized varieties are acute pemphigus (pemphigus acutus); chronic pemphigus (pemphigus chronicus); pemphigus foliaceus; pemphigus vegetans; and pemphigus neonatorum, also known as pemphigus contagiosus, pemphigus epidemicus. The last named is quite certainly not a true pemphigus, but a form of impetigo contagiosa (q. v.) of unusual virulence, or occurring in an unusually susceptible skin, such as that of the newborn infant.

ACUTE PEMPHIGUS

Symptoms.—Acute pemphigus, a rare form, usually begins with more or less constitutional disturbance, such as chilliness, headache, malaise, and elevation of temperature, the last sometimes considerable, which is followed within a variable period, usually from a few hours to a day, by an eruption of blebs varying in size from that of a pea to a large nut containing clear, turbid, or bloody serum. Usually the lesions arise from seemingly normal skin, are hemispherical in shape and tensely filled with fluid. Less frequently they are seated upon a more or less hyperæmic skin and are surrounded by a narrow inflammatory halo. The number of blebs present at any one time varies considerably. There may be but eight or ten or even less, or there may be scores. They usually appear in successive crops, although there may be but a single outbreak. In severe cases with many lesions they are apt to become confluent, and large denuded areas result from the breaking of the walls of the blebs in which a secondary infection speedily occurs. These areas discharge an abundant sero-purulent, frequently malodorous fluid, which dries into thick blackish or brownish crusts.

The mucous membranes of the lips, tongue, cheeks, pharynx and larynx are frequently the seat of a similar eruption. In this situation the blebs rupture early and leave superficial excoriated areas which are sensitive, making the taking of food and drink painful.

The duration of acute pemphigus varies from ten days to several weeks, depending largely upon the severity and extent of the eruption in the individual case.

In mild cases constitutional symptoms may be entirely absent, or, if present in the beginning of the attack, usually disappear after the full development of the eruption. In severe attacks with many lesions, there is commonly considerable elevation of temperature, and in the cases which go on to a fatal termination there are great prostration,

delirium, diarrhœa, and other evidences of profound toxæmia preceding death.

Etiology.—As a considerable number of the cases reported occurred in those who had suffered from a wound, or who were especially exposed to infection, such as butchers, it seems more than likely that the malady is due to an infection of some sort. Bulloch found a diplococcus in the blebs of a case reported by Pernet, and a similar organism was found by Demme. In a series of sixteen cases collected by Pernet one-half occurred in butchers, and in four of them there was a history of a wound preceding the disease.

CHRONIC PEMPHIGUS

Synonym.—Pemphigus vulgaris.

Symptoms.—Chronic pemphigus (Plate XII), like the acute form, is characterized by an eruption of variously sized blisters filled with clear, straw-colored or turbid serum. These are globular or hemispherical in shape, usually tensely distended and rise abruptly from apparently normal skin (Fig. 44).

The eruption usually shows no special predilection for any particular region, but occasionally it is distributed symmetrically in the region of the axillæ (Fig. 45), on the arms, and in the groins, this distribution being observed in the pemphigus of young subjects much more frequently than in adults. The blebs are usually scattered about irregularly, but exceptionally they may exhibit a marked circinate arrangement (pemphigus circinatus). The number of blebs present at any time varies from few to many, in many cases there are never more than eight or ten, and there may be so few as one or two; in severe attacks, on the other hand, they may number hundreds. When they are recent, their contents are usually quite clear, but after a day or two they become cloudy, then purulent, when they are surrounded by a narrow inflammatory halo. The eruptive outbreak is usually preceded or accompanied by more or less pronounced constitutional symptoms, such as chilliness, headache and fever. New lesions may appear daily throughout the entire course of the disease (pemphigus diutinus), or there may be exacerbations and remissions, the former lasting from ten days to two or three weeks, the eruption appearing in successive crops, each crop after a time growing less abundant and less well formed, as if the causative agent underwent a progressive diminution in force, until toward the end of the exacerbation there may be nothing more than erythematous patches on which are a few ill-developed small blebs. In a certain, perhaps the larger, proportion of cases, remissions or intermissions occur during which there may be few or no eruptive lesions and the patient is apparently quite well, but sooner or later a new eruption appears in the regions previously affected or in new regions, preceded or accompanied by chills and fever and other constitutional symptoms which pursue a course similar

PLATE XII

Chronic pemphigus.

to that already described. In this manner the malady may last for months or years, the patient's nutrition being gradually lowered with a corresponding loss of strength until death eventually occurs with symptoms of profound toxæmia, or from some intercurrent affection. When the eruption is extensive, particularly when numerous blebs occur upon the back, and inner surface of the thighs, pressure, or friction of the opposed surfaces, quickly ruptures their walls, leaving extensive denuded areas from which there is an abundant, frequently fetid discharge which dries into thick crusts.

Fig. 44.—Chronic pemphigus.

The buccal, lingual, pharyngeal and laryngeal mucous membranes are frequently attacked, producing in the last-named situation hoarseness or complete aphonia. The intestinal mucosa is likewise attacked, as is occasionally evidenced by diarrhœa with bloody stools in which there are shreds of mucous membrane. The conjunctiva may be the seat of small blebs, followed in time by inflammatory adhesions between the ocular and palpebral mucous membranes.

The subjective symptoms are rarely very marked. At times there is a feeling of soreness and burning with moderate itching; in exceptional cases the itching is most severe (pemphigus pruriginosus).

PEMPHIGUS FOLIACEUS

In this rare form of the malady the amount of fluid exudation is insufficient to form well-distended bullæ, but instead there are flat, flaccid blebs which rupture and leave a raw exuding surface, or dry up into thin crusts. At times the amount of fluid present is scarcely sufficient to elevate the epidermis which then exfoliates in large flakes and scales. The eruption slowly spreads until it eventually covers the entire cutaneous surface. The scalp is often attacked as well as the smooth surfaces and the hair is lost in consequence, and the nails are occasionally shed. The palms and soles, as well as the regions about

FIG. 45.—Pemphigus vulgaris.

the joints, after a time frequently exhibit more or less fissuring. As in other forms of pemphigus the mucous membranes of the cheeks and tongue are likewise involved at times, and the conjunctivæ become inflamed with the subsequent production of a more or less marked ectropion. When the disease has reached extensive proportions, and occasionally in its earlier stages, there is usually elevation of temperature, with progressive loss of strength.

The duration of the affection varies from a few months to some years with remissions and exacerbations. While recovery may take place, a fatal termination occurs in the majority of cases, either as the result of exhaustion or from some intercurrent affection, such as pneumonia.

The peculiar features which characterize this variety of pemphigus may be present from the beginning, or they may follow a dermatitis, such as dermatitis herpetiformis or form the terminal stage of severe chronic pemphigus of the ordinary type.

PEMPHIGUS VEGETANS

In 1886 Neumann first described a rare form of pemphigus under the name of pemphigus vegetans, although examples of the disease had been observed earlier by Kaposi, who believed it to be a vegetating syphiloderm (see Plate 64 of his Atlas).

The affection usually begins upon the mucous membranes of the lips, cheeks, tongue or pharynx with whitish patches and blebs which are speedily broken, leaving painful excoriated areas. After some weeks, or it may be months, well-defined blebs occur upon the skin, usually upon the hands, feet, anterior border of the axillæ, in the groins and, in women, about the vulva, extending backwards over the perineum to the anal region. In its later stages the eruption becomes more or less generalized.

With the rupture of the blebs, a raw, oozing surface is left which frequently shows but little tendency to heal and about the border of which new blebs frequently appear. In the axillæ and groins red or grayish papillomatous elevations appear on the oozing bases of ruptured blebs resembling flat condylomata from which an exceedingly offensive odor is given off. About the corners of the mouth fissures covered with a grayish exudate form and the mucous membrane of the lips is often raw, crusted and bleeding (Fig. 46). There is usually more or less constitutional disturbance, appearing during the course of the affection or present from the beginning. As the disease advances, the patient becomes increasingly enfeebled and frequently falls into a comatose condition from which he is roused with difficulty. This progressive enfeeblement appears even in those cases in which the eruption is of moderate extent, and in the course of a few months death occurs in the great majority of cases, if not invariably. Herxheimer has called attention to muscular tremor as a frequent symptom in exten-

sive cases. In a case under the author's observation a few years ago in the wards of the Philadelphia General Hospital, frequent slight convulsive movement of the upper extremities often accompanied by a shrill cry, continued at intervals throughout the course of the disease. There was likewise a painful spastic contraction of the adductors of the thigh, with marked increase of the superficial and deep reflexes, symptoms to which Neumann has called attention.

Etiology.—Nothing certain is known about the direct cause of pemphigus, but there is increasing evidence that it is a toxæmia. In the acute form of the affection the evidence in favor of its infectious character is little short of demonstration. The cases of Pernet, Bul-

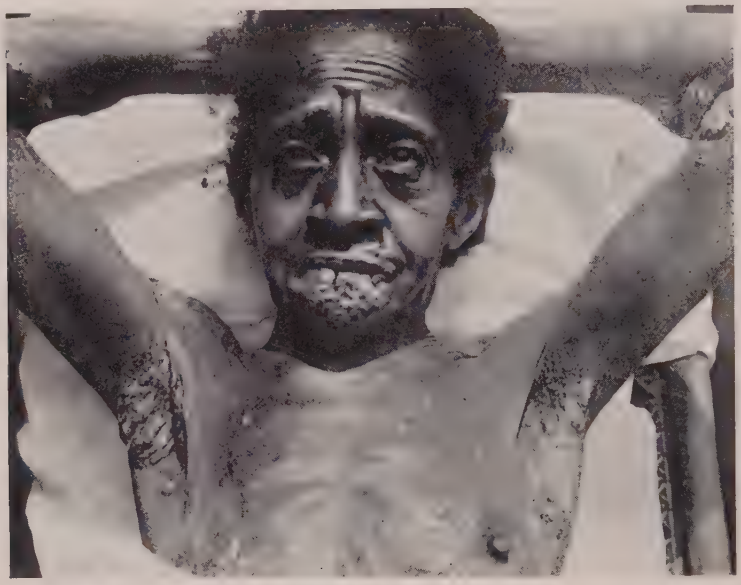


FIG. 46.—Pemphigus vegetans, negress. In addition to the vegetations shown in the axillæ, there were also large and numerous vegetations in the groins and between the buttocks, all of which had been preceded by blebs. The crusts about the mouth and on the arms and the white scars over the chest were also preceded by blebs.

lock, Bowen, and others, scarcely admit of any other explanation. In the chronic forms of the malady the bacillus pyocaneus has been found by a number of investigators, but whether this was only accidentally present or bore some etiological relationship to the affection, has not yet been determined. Bruck found that while the contents of the blebs in two pemphigus patients were sterile they contained a streptococcic toxin ("streptolysin"), which, when inoculated into the skin of pemphigus patients during an intermission, produced blebs at the site of inoculation, although without effect in those free from the disease. These experiments seem to point decidedly to the presence of a toxæmia of bacterial origin.

The view that it is in some way dependent upon functional dis-

turbance of the central or peripheral nervous system has for a long time occupied a prominent place among the theories of its etiology, but the evidence for this still lacks much. The supporters of this theory depend largely upon the instances in which the disease has followed closely upon nervous shock or other disturbance of nervous function. Even those who regard it as due to a toxæmia are inclined to the belief that the toxin or toxins, whatever they may be, are the result of disturbed metabolism resulting from faulty innervation. Various degenerative changes have been found in the spinal cord and peripheral nerves, but none of these were of such a character as to indicate a causal connection with the affection. Kaposi, who had the opportunity to examine nine cases of pemphigus in which a fatal termination occurred, failed to find any evidence of disease in the spinal cord in eight. While it is quite well established that disease and injury of the central and peripheral nervous systems may be followed by the formation of bullæ in the skin, this is far from conclusive proof that the lesions of pemphigus have any such origin.

Pathology.—The bleb may be formed in the upper portion of the rete, its roof consisting of the horny layer of the epidermis, but more frequently it is situated in the deeper portions of the epidermis and, occasionally the entire epidermal layer is stripped from the papillary layer of the corium (Fig. 47) the floor of the bleb consisting of the naked papillæ and its roof of the entire thickness of the epidermis. In all the cases which I have had the opportunity of studying histologically, the bleb was situated between the epidermis and the papillary layer of the corium. The blebs usually contain a limited number of leucocytes entangled in a scanty fibrinous meshwork, a considerable percentage of which are eosinophiles. The papillæ of the *pars papillaris* are markedly œdematous, and filled with leucocytes, for the most part surrounding the vessels, numbers of which are eosinophiles.

In pemphigus vegetans the blebs present much the same features as in ordinary pemphigus. In a case which the author had the opportunity of studying a few years ago the leucocytes found in the blebs were chiefly of the eosinophilous variety. The papillæ of the corium were usually greatly increased in size, especially in the longitudinal direction, projecting into the cavity of the bullæ like fingers (Fig. 48). In the vegetative condyloma-like plaques there was a marked acanthosis with a great increase in the size of the interpapillary prolongations of the rete (Fig. 49).

As in many other bullous affections, there is frequently, but not invariably, a more or less marked increase of eosinophilous cells in the blood.

Diagnosis.—The diagnosis in well-developed pemphigus is usually made without difficulty. The unfiormly bullous character of the eruption, accompanied in many cases by more or less marked constitutional symptoms, and the frequent invasion of the mucous membrane of the mouth, are symptoms which are quite characteristic of the disease.

The affections with which it is most likely to be confounded are the bullous form of erythema multiforme, dermatitis herpetiformis, impetigo contagiosa in infants, epidermolysis bullosa, the bullous syhiloderm, certain drug eruptions, such, for example, as occasionally follow the ingestion of antipyrin and iodide of potassium, and lastly certain pemphigoid eruptions which sometimes follow septic wounds or vaccination.

Erythema multiforme usually runs a rapid course as compared

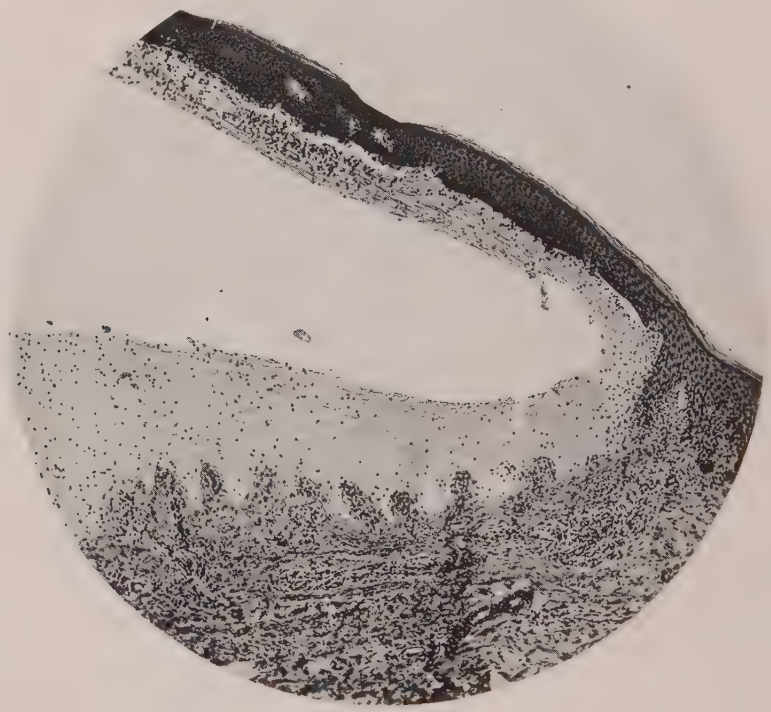


Fig. 47.—Bleb of pemphigus.

with acute pemphigus, the only variety for which it might be mistaken, and shows a decided predilection for the extensor surfaces of the forearms and backs of the hands. Moreover, the eruption is rarely a uniformly bullous one, but also exhibits erythematous and vesicular lesions.

Dermatitis herpetiformis frequently presents bullæ, but these are often associated with erythema, vesicles and pustules, and the mucous membranes are rarely involved. Itching, too, is usually a very prominent symptom, while it is quite exceptional in pemphigus.

In very young infants impetigo contagiosa frequently presents

extensive blebs, but these exhibit a marked tendency to peripheral extension and rapidly dry up into thin yellowish crusts.

The septic bullous affections are not always easily distinguished from pemphigus, but the presence of a septic wound, even a slight one, will usually lead to a correct diagnosis, although it must be admitted that in some cases the eruption is indistinguishable from ordinary pemphigus. Indeed, it is by no means certain that they should not be regarded as a variety of that malady.

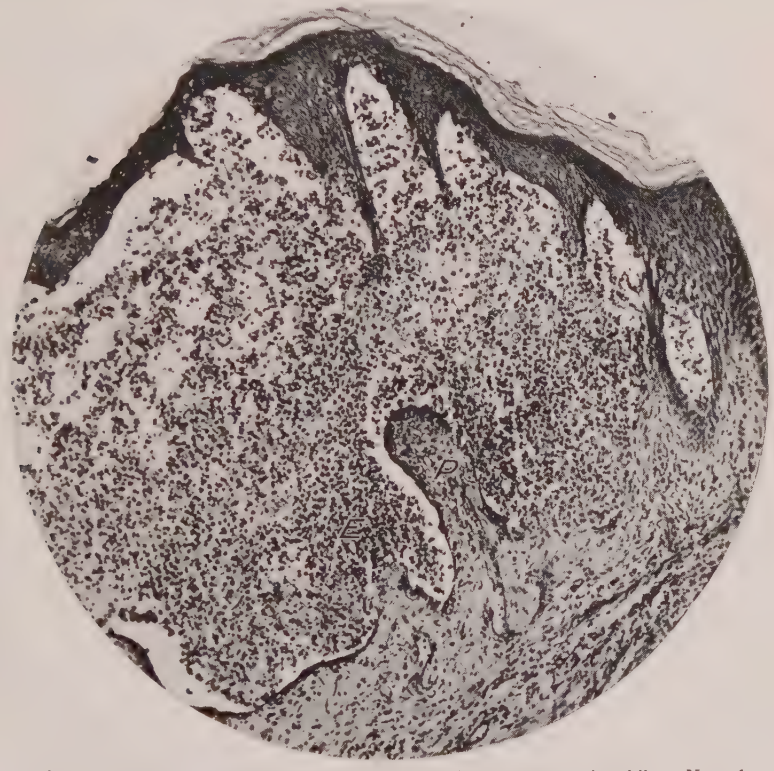


FIG. 48.—Bleb of pemphigus vegetans. The cells in the bleb are largely eosinophiles. Note the greatly elongated papilla at *P*.

In epidermolysis bullosa the eruptive lesions are situated most commonly upon the hands and feet, or in regions especially subjected to pressure, or exposed to mechanical injury. Moreover, a history of heredity is usually to be obtained and it is usually congenital.

The bullous syphiloderm, which is seen only in infants, as a rule, may resemble pemphigus, but the bullæ are situated almost invariably on the palmar and plantar surfaces, regions seldom attacked by pemphigus, and other symptoms of syphilis are usually present.

The bullous drug eruptions are distinguished by their sudden appearance after the ingestion of drugs, such as potassium iodide, antipyrin, etc.

Pemphigus vegetans may be mistaken for a vegetating syphiloderm. Indeed, the earliest cases were thought to be syphilis, owing to the resemblance of the vegetative lesions in the groin to condylomata, but, the presence of blebs preceding the vegetative lesions, the fever which usually accompanies the disease, the absence of glandular enlargement and, lastly, a negative Wassermann reaction, will serve to establish the differential diagnosis. In its early stages, however, when the symptoms are confined to the mouth, the diagnosis may be a matter of considerable difficulty.

Treatment.—The treatment of pemphigus should be both internal

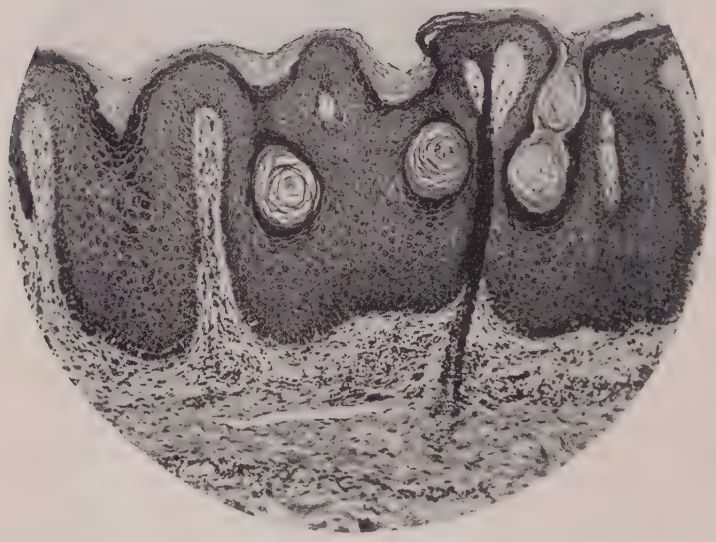


FIG. 49.—Pemphigus vegetans. Section of a vegetation from groin. Marked acanthosis, with a moderate cellular exudate in upper portion of corium.

and external. In the acute form quinine in large doses is probably the most useful internal remedy. In chronic pemphigus arsenic has long enjoyed a reputation as a remedy of considerable value, and there is little doubt that when given in full doses for some time it shortens the attacks and lengthens the intervals between them, but it does not cure. It may be given either in the form of Fowler's solution, beginning with five drops three or four times a day and gradually increasing the dose to the limit of tolerance; or as the solution of the arseniate of soda in the same doses. The cacodylate of soda may be given hypodermatically in doses of a half grain (0.03) to a grain (0.065) once

a day, but after considerable trial the author has not found this as effective as other forms of arsenic. Recently Grouven has reported unusually good results from injections of salvarsan; others, however, have been less successful with it. Quinine is likewise a valuable remedy in chronic cases and should be given in considerable doses, five grains (0.26 or 0.32) four or five times a day. It has seemed to me that the salicylate is more effective than the commonly employed sulphate. Crocker found salicin succeed sometimes when arsenic failed, putting a stop to the appearance of blebs completely in a considerable proportion of cases. It may be given in doses of fifteen grains (1.0) three or four times a day. Strychnia, iron and codliver oil are at times of use, the first being especially valuable when the patient's strength is beginning to fail. As a matter of course, the patient should have an abundance of easily assimilable nutritious food at regular intervals.

In those cases in which microörganisms are found in the contents of the bullæ an autogenous vaccine might be employed with some hope of relief, but, as has already been pointed out, the blebs are usually sterile.

The blebs should be evacuated by repeated punctures with a sterile needle to prevent their rupture, and a saturated solution of boric acid should be applied continuously on lint or gauze. Denuded areas should be covered with some mildly stimulating ointment spread upon lint. A two per cent. salicylic acid ointment, made up of equal parts of lead plaster and cosmoline, answers very well for this purpose. In extensive eruptions one of the best forms of local treatment consists in the frequent application of large quantities of talcum powder or oxide of zinc, to which has been added twenty to thirty per cent. of powdered boric acid. Such a powder should be applied often enough and in such quantities as to keep the skin thoroughly dry. Although not so agreeable to the patient, this treatment is frequently more effective than lotions or salves. In cases in which large areas are covered by the eruption warm bran or starch baths often prove most comforting, and in the severest cases the continuous water-bath may be employed with much benefit.

Prognosis.—The prognosis is always serious. In acute cases with extensive eruption, accompanied by marked constitutional symptoms, a fatal issue is common. In chronic pemphigus of moderate severity the disease may continue for years without affecting the patient's general health to any considerable degree, but when the attacks are severe and frequently repeated death eventually results as the consequence of gradual enfeeblement, or from sepsis or some intercurrent affection, such as pneumonia or nephritis. Pemphigus foliaceus and pemphigus vegetans are almost invariably fatal, the latter even when the eruption is of limited extent.

Pemphigus of children is usually a much less serious affair than that of adults.

EPIDERMOLYSIS BULLOSA HEREDITARIA

Synonyms.—Congenital pemphigus; Dermatitis Bullosa Hereditaria; Acantholysis Bullosa.

Definition.—A very rare condition of the skin characterized by an extraordinary tendency to the formation of blebs after friction or slight traumatism.

Symptoms.—Goldscheider is credited with the first description of this affection, but Tilbury Fox, some years before, had reported two cases of what was probably the same disease. Payne, Legg, Valentin, Köbner, Bonaiuti, Herzfeld, Blumer, Elliot, Beaty, Engman and Mook, together with a few others, have since reported cases. The entire number is very limited. The malady is distinguished by the occurrence of variously sized blebs, usually with clear, occasionally with bloody, contents, situated upon the hands, frequently the palms, the elbows and knees, and other parts especially exposed to slight knocks or friction by the clothing, such as the neck, the waist, the region of the garters, and the feet. Luithlen recognizes two types. In the first the blebs disappear without any subsequent alteration of the skin except a slight transient pigmentation; in the second type the bullæ are occasionally hemorrhagic, and scarring, atrophy, permanent pigmentation, milia in the scarred areas as in pemphigus, and varying degrees of dystrophy of the nails, even to complete disappearance, occur. In this form the blebs are apt to display a certain symmetry in their distribution, and the mucous membranes of the mouth and pharynx may present bullæ after eating food which is of firm consistence. The general health is in most cases unaffected even after long duration of the disease.

Etiology and Pathology.—In the great majority of the cases observed the hereditary character of the malady was most pronounced. In Goldscheider's case the patient's father, grandmother, a maternal aunt, a brother, and a sister were affected in the same manner. Blumer has reported its occurrence in four generations, affecting eleven out of twenty-four males and five out of twelve females. Similar examples of its hereditary character have been reported by a number of other authors. In a few cases it has appeared in adults (epidermolysis bullosa acquisita) without any evidence of inheritance. Kablitz has recorded an instance in which it appeared at the age of fifty-nine, and very recently Wise and Lautman have reported one in which it began at thirty-nine.

Elliot regards the disease as a dermatitis resulting from traumatism, occurring in an individual with a special predisposition to excessive response on the part of the blood-vessels to irritation. He found the bullæ situated in the lowest portion of the rete, their roofs formed by the entire thickness of the epidermis. The vessels of the papillæ were greatly dilated, but there was no exudation of cells about them. In the subpapillary portion of the corium there was dilatation of the vessels, which were surrounded by a cellular infiltration.

Engman and Mook found that the elastic tissue was greatly diminished or absent in the skin, even in regions where the skin was apparently sound, a finding which has since been confirmed by Kanoky and Sutton.

Diagnosis.—The congenital character of the malady, and the appearance of the blebs after traumatism or friction, are features which distinguish it from pemphigus, the only affection for which it is at all likely to be mistaken.

Prognosis and Treatment.—The prognosis as to recovery is most unfavorable, the malady usually continuing throughout the patient's lifetime.

No treatment is known by which the abnormal vulnerability of the skin may be lessened. Every means should be employed to protect the skin against knocks and friction. The blebs should be evacuated and exposed raw surfaces covered with a 2 per cent. ointment of carbolic acid until healing has taken place.

IMPETIGO CONTAGIOSA

The term impetigo was employed by the early writers with varying significance, and applied to a variety of affections which resembled very little, or not at all, the diseases to which it was applied later. Willan was the first to use it to designate eruptions of a pustular character, recognizing five varieties, among which were included certain forms of pustular eczema. As employed to-day, its use is very much restricted, being limited to the impetigo contagiosa of Tilbury Fox, to the pustular affection known as Bockhardt's impetigo, and to Hebra's impetigo herpetiformis, which is in no way related to the first two. The simple impetigo as described by Duhring was not recognized by most authors, and the several varieties described by Unna, such as impetigo vulgaris, impetigo circinata, impetigo streptogenes, impetigo multilocularis, are probably nothing more than clinical variants of the impetigos of Tilbury Fox and Bockhardt.

Synonyms.—Porrigo contagiosa; impetigo vulgaris; impetigo streptogenes; impetigo circinata; impetigo figurata.

Definition.—An acute, contagious, inflammatory disease characterized by an eruption of vesicles, vesico-pustules, and occasionally blebs, which usually show a marked tendency to peripheral extension, and which dry into thin brown crusts.

Symptoms.—The eruption begins as small red points, at the site of which pin-head-sized vesicles straightway appear, which enlarge to form thin-walled, flat, flaccid, sometimes tense, hemispherical vesico-pustules and blebs varying in size from that of a pea to a coin. In the course of some days these dry up into rather thin, loosely adherent brown crusts, which soon fall, leaving a red, slightly pigmented patch, which completely disappears in a short time. The contents of the lesions in the earliest stages are clear, but they soon become turbid

and finally seropurulent or frankly purulent. They are usually discrete, without any particular arrangement, but may occur in patches, forming irregular crusted areas through the coalescence of a number of adjacent lesions. Occasionally, as they spread at the border, they dry up in the centre, forming rings, and two or more of these may join to form gyrate or crescentic figures (impetigo circinata, impetigo figurata). In exceptional cases blebs of considerable size may form

Fig. 50.—Impetigo contagiosa.

with flaccid or tense walls, which soon rupture, leaving moist red areas denuded of the horny layer of the epidermis (impetigo bullosa).

The disease most commonly attacks the uncovered parts of the skin, such as the face (Fig. 50) (its most frequent site), the ears, the hands, the scalp. Much less frequently it occurs upon the trunk and extremities. Upon the hands it is often seen about the root of the nails as a rapidly spreading, flat vesico-pustule containing a small quantity of turbid fluid, scarcely more than sufficient to lift the horny

layer of the epidermis from the rete beneath; these lesions are popularly known as "run-arounds." On the scalp it gives rise to thick adherent crusts, matting the hair, beneath which there is a red moist surface. In men the bearded region is often attacked, when it is usually erroneously called "barber's itch"; not very infrequently it assumes in this region the ringed or crescentic arrangement already referred to (Fig. 51). Quite exceptionally the mucous membranes adjoining the skin, such as the border of the lips, the margin of the nostrils, the conjunctiva, and the vulvo-vaginal junction are attacked.

Although many of the individual lesions tend to dry up and disappear in from eight to ten days, new ones continue to appear, often through auto-inoculation, so that the disease may be prolonged for weeks, or even a month or two, unless cut short by treatment.

Tilbury Fox, in his description of the affection, noted the occasional occurrence of slight fever in the beginning, and Crocker has made a similar observation, but in the great majority of cases there are no constitutional symptoms. Itching may be present, but is seldom a prominent symptom, and is often absent altogether.

FIG. 51.—Impetigo contagiosa circinata. A somewhat unusual form.

In very young infants, from a few days to two or three weeks old, the disease presents some features deserving of special notice. In these it occurs much more frequently on the trunk and extremities than in older subjects, and, owing to the great delicacy of the skin, the lesions soon rupture, leaving bright-red, moist, rapidly extending denuded areas, about the borders of which are whitish or grayish shreds and tags of the undermined horny layer of the epidermis. Occasionally extensive areas are thus denuded, and in this event it may prove fatal. Its occurrence in the wards of a maternity hospital is always a matter of considerable importance, since it frequently assumes epidemic proportions, spreading rapidly to other infants. Most authors are agreed that this form is identical with the so-called pemphigus neonatorum, an opinion which the author's own observations tend to confirm.

The tropical disease described by Manson as pemphigus contagiosus is regarded by that author as a variety of impetigo contagiosa. In children the symptoms are much the same as those seen in temperate

climates, but in adults it is apt to be confined to the axillæ and groins, where it produces raw, oozing patches, occasioning much discomfort.

In Bockhardt's impetigo (impetigo staphylogenes) the eruption is

Fig. 52.—Bockhardt's impetigo.

pustular from the beginning, there being no early vesicular stage, as in impetigo contagiosa. The lesions are pin-head to pea-sized, flat pustules (Fig. 52), usually discrete, which show much less tendency to extend peripherally than those of impetigo contagiosa. The erup-

tion is situated in the scalp and on other hairy parts of the body, and is always follicular, each pustule having a hair in its centre. In the scalp it is frequently associated with pediculi; indeed, its occurrence in the occipital region in children is almost certain evidence of the presence of these parasites. Not very infrequently the lesions of this variety coexist with those of impetigo contagiosa.

Etiology and Pathology.—Impetigo contagiosa is, as its name indicates, contagious, and the lesions are likewise auto-inoculable. It occurs chiefly among children, especially among the poorer classes, but is not at all uncommon among the well-to-do and in adults. It occasionally assumes an epidemic form, especially in schools, where it is transmitted by towels, by bathing-clothes, and by direct contact such as occurs in athletic sports and games. It frequently begins in a superficial abrasion or scratch, and such lesions are often inoculated in those who already have the disease. It has been observed to follow vaccination.

According to Sabouraud, it is a local infection due to a streptococcus which he identifies with the streptococcus of Fehleisen. The staphylococci which are found in the lesions are a secondary invasion, which soon overwhelms the primary infection. Lewandowsky found a streptococcus in one hundred cases. According to the recent studies of Dohi and Dohi, there are two varieties of contagious impetigo, one due to a streptococcus, the other of staphylococcic origin. Although there are still those who regard it as due to the ordinary staphylococci, the weight of evidence is decidedly in favor of its streptococcic origin.

While most authors are inclined to accept, on clinical grounds, the identity of impetigo contagiosa and pemphigus neonatorum, the results of recent bacteriological studies are by no means conclusive as to this. Lewandowsky, in a small series of cases, found both streptococci and staphylococci, the latter predominating. In a recent study of seven cases observed in an epidemic of the affection, which they call *pemphigoid*, Cole and Ruh found pure cultures of the staphylococcus. They believe it should be sharply differentiated from impetigo contagiosa.

Bockhardt's impetigo is due to the invasion of the follicles by the staphylococcus aureus and albus, more frequently the former. It is frequently associated with such itching diseases as pediculosis and scabies, infection taking place through scratching.

The vesicles of impetigo contagiosa are situated between the horny layer of the epidermis and the rete. They contain numerous polymorphonuclear leucocytes, some lymphocytes, a few loose epithelial cells, and large numbers of streptococci and staphylococci. There is some œdema of the rete, with consequent enlargement of its cells, and an increase in the size of the intercellular spaces, in which there are considerable numbers of migratory leucocytes. In the superficial portions of the corium the vessels are somewhat dilated and there is a moderate exudation of round cells.

The impetigo of Bockhardt is essentially a pustular folliculitis. The pustule, its roof formed by the horny layer of the epidermis, is situated about the mouth of the follicle, and contains numerous polymorphonuclear leucocytes, epithelial débris, and large numbers of staphylococci. In the rete immediately about the follicle there are large numbers of migratory leucocytes, which separate the rete cells, many of which lie detached in the cavity of the pustule. According to Sabouraud, necrosis of the superficial portion of the corium immediately beneath the pustule frequently occurs, producing a small scar.

Diagnosis.—Impetigo is to be distinguished from pustular eczema, ecthyma, varicella, and from acute pemphigus.

The pustules of impetigo are usually discrete, and those of impetigo contagiosa show a marked tendency to peripheral extension. Eczema occurs in diffuse patches, which are often covered by thick crusts, owing to abundant oozing. In eczema itching is commonly a marked symptom, while in impetigo it is trifling or absent altogether.

Bockhardt's impetigo may be mistaken for ecthyma, but the pustules of the latter are larger, deeper seated, and covered with thick crusts beneath which there is ulceration.

In varicella the lesions are small, frequently very numerous, scattered over the trunk as well as the face, and in a large proportion of cases are found on the buccal and palatal mucous membrane, as well as the skin. Constitutional symptoms usually accompany the onset of the disease. Bullous impetigo may be mistaken in its early stages for pemphigus, but the bullæ of the latter are usually larger than those of the former, arise from apparently sound skin, and show no tendency to peripheral extension after they are fully developed. The eventual course of the two affections is quite unlike.

Prognosis.—When left to itself, or if injudiciously treated, impetigo may last for many weeks, but it yields readily to proper treatment.

Treatment.—The treatment is altogether local, and consists in the application of mild antiseptic lotions and ointments after removal of the crusts by soap and warm water, or by the liberal application for a few hours of a 2 per cent. carbolated vaseline. One of the most effective remedies is an ointment of ammoniated mercury, ten to twenty grains (0.65 to 1.30) to the ounce (32.0), using as a base cold cream or oxide of zinc ointment. This should be applied twice a day with gentle friction, care being taken to impress the patient or his attendant with the necessity for applying it to every lesion, however small. In adults, who may find it inconvenient to go about during the day with an ointment on the face, a 1:5000 solution of mercuric bichloride may be softly mopped on two or three times a day and the ointment applied at night upon retiring. In new-born infants the ointment should be somewhat weaker than in older patients, ten grains (0.65) to the ounce (32.0) being a proper strength, and the skin in the neighborhood of the eruption should be frequently bathed with a saturated solution of boric acid. In maternity hospitals the

utmost care should be taken to prevent the spread of the disease. The patient's clothing should be thoroughly sterilized and the dressings burned.

DERMATITIS REPENS

Synonyms.—Acrodermatitis perstans; acrodermatite suppurative continué (Hallopeau).

Definition.—A spreading inflammation of the skin, situated upon an extremity.

This affection was first described by Crocker, in 1888, and again in 1892, who gave it the very appropriate name dermatitis repens, which has been very generally accepted by authors.

Symptoms.—It usually begins as a few small vesicles or a flat bleb, which shortly ruptures, disclosing a moist red surface, which steadily extends and is surrounded by a narrow collar of undermined epidermis. In some cases, as in one under the author's care some years ago, the patch spreads by the constant formation of minute vesicles and pustules about its margin, which soon rupture and discharge a seropurulent fluid, which dries into a thin crust. As the disease extends, the part of the skin first attacked becomes dry, smooth, and glazed or desquamates. While in the great majority of cases the disease spreads by continuity, small groups of vesicles may appear in the immediate neighborhood of the patch, which soon coalesce with it and thus extend it. It usually continues to spread slowly until a considerable area may be covered, such as an entire extremity, or, in very exceptional cases, it may spread to the trunk. It usually continues for many weeks or several months, and may last for years (Fig. 53).

According to Crocker, instead of being moist, the disease may be dry throughout its course, the patch spreading peripherally, surrounded by a dry, undermined epidermic collar.

Under the title acrodermatitis perstans (acrodermatite suppurative continué), Hallopeau has described an affection which presents many of the features of dermatitis repens and is probably a variety of it. It begins with a vesicular and pustular eruption, situated in the beginning upon a finger, which slowly spreads until it may involve the entire hand. Secondary eruptions of an erythematous or pustular character may appear upon parts more or less remote from the original focus, and may be more or less general in their distribution. The disease is of long duration and repeated recurrences, usually in the same situation, are common.

Etiology and Pathology.—In the great majority of the reported cases the disease began at the site of an injury, sometimes of a trivial character. The manner in which it spreads is very suggestive of an infection which takes place at the site of the injury. Crocker believed it to be a peripheral neuritis set up by an injury. Hallopeau was convinced of its microbic origin, and thought it probably due to the staphylococcus.

Sutton, who has recently studied several cases of the malady, found the yellow staphylococcus in the serum from the spreading margin of the patch. He concludes from its clinical features and its histology that Hallopeau's acrodermatitis perstans and dermatitis repens are the same disease and that both are probably due to a particular strain of the staphylococcus.

Diagnosis.—The affection for which it is most likely to be mistaken is eczema, but its usual limitation to an extremity, its well-defined and steadily spreading borders, and the usual absence of any pronounced subjective symptoms are features by which it may be readily differentiated from that disease.

Prognosis and Treatment.—The malady is usually very rebellious

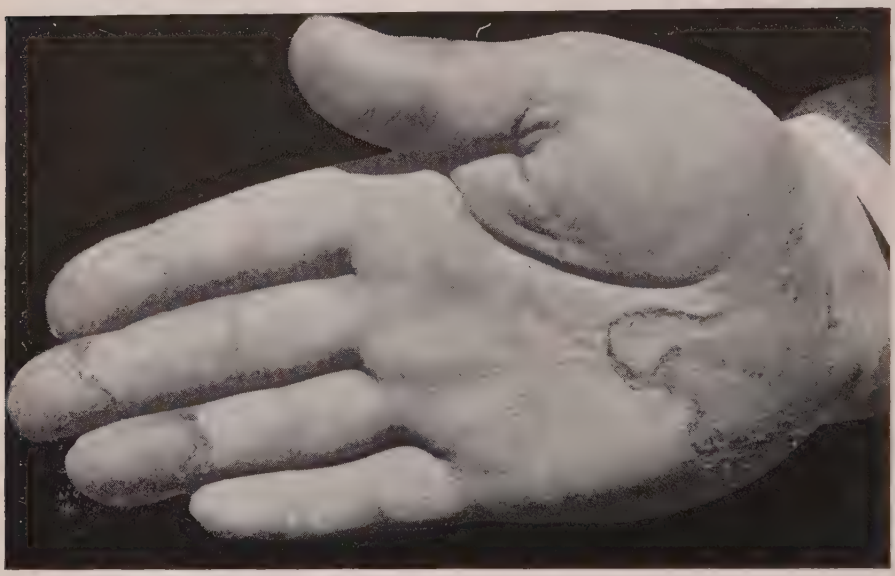


FIG. 53.—Dermatitis repens.

to treatment and may persist for months. Some of Hallopeau's cases lasted for years. The only effective remedies are antiseptic washes and ointments. Crocker found painting the patch with a ten per cent. solution of permanganate of potash, after trimming away the undermined epidermis, the most effective treatment. In a case under the author's care, painting the borders of the patch, after trimming away the loosened epidermis, with a solution of formalin in glycerin, one drachm to the ounce (4.0 to 32.0), followed by Brooke's paste, was followed by a cure after a number of other methods had been tried. (Brooke's paste is Lassar's paste to which is added thirty per cent. of the five per cent. oleate of mercury.) Sutton obtained excellent results from the use of a solution of salicylic and tannic acids in alcohol, two per cent. of the former with ten per cent. of the latter.

DERMATITIS VEGETANS

The affection first described by Hallopeau under the title *dermatite pustuleuse chronique en foyers a progression excentrique*, but to which he later gave the less cumbersome title *pyodermite végétante*, resembles in a number of its clinical features pemphigus vegetans, and this author, who at first believed the malady a new and distinct type of disease, later came to regard it as a variety of that affection.

The cases observed by Hallopeau, Wickham, and the author were characterized by successive crops of vesicles and vesico-pustules occurring in patches, chiefly about the groins, on the inner surface of the thighs, and, less frequently, in other regions, such as the hypogastric and lumbar regions, the axillæ, and in small numbers in the

FIG. 54.—Dermatitis vegetans.

mouth. The eruption was succeeded by markedly elevated plaques with uneven, moist, and crusted surface about the borders of which new pustules appeared. Marked itching and burning were prominent symptoms. In the case which the author reported an inflammation presenting all the features of chronic eczema was present upon the lower extremities. More recently Wende, Pusey, and others have reported cases presenting similar vegetative plaques following a dermatitis in various regions.

The exact place of the affection represented by the cases of Hallopeau, Wickham, and the author is still undetermined, but its relationship to pemphigus vegetans of Neumann is, it seems to the author, doubtful. In some of its features it seems much more nearly related to dermatitis herpetiformis.

The occurrence of vegetative plaques following a dermatitis is

not to be taken as evidence of a relation of such cases to the pyodermite of Hallopeau. The cases of Wende and Pusey, in the author's opinion, represented a quite distinct affection. Such vegetative plaques may follow, in exceptional cases, various inflammatory conditions of the skin, such as eczema. In the case of a middle-aged woman under the author's observation in the skin dispensary of the University Hospital some years ago, large papillomatous plaques occurred upon the backs of both hands, apparently as the sequel of an ordinary dermatitis; these disappeared in the course of a few weeks under the simple application of a saturated solution of boric acid (Fig. 54).

The treatment consists in strict attention to cleanliness and the frequent application of weak antiseptic lotions, such as a saturated solution of boric acid, or a 1:5000 solution of bichloride of mercury.

DERMATITIS GANGRÆNOSA

Synonyms.—Sphaceloderma; Gangrene of the skin.

Gangrene of the skin presents a considerable number of varieties which differ more or less from one another in their cause and course. It may be due to a number of causes, some of which are local and external to the organism, others internal and general. Among the former are direct violence, exposure to heat or cold, contact with caustic substances, and invasion of the skin by microörganisms; among the latter are such diseases of the blood-vessels as result in narrowing or occlusion of their lumen, shutting off the blood supply to the skin, such diseases of the central or peripheral nervous system as interfere with trophic functions, general infections such as typhoid fever, and the exanthemata and diseases like chronic nephritis and diabetes, which lead to the formation and retention of injurious substances in the organism, which injuriously affect the skin and increase its liability to invasion by microörganisms.

DERMATITIS GANGRÆNOSA INFANTUM

Synonyms.—Varicella gangrænosa; Infantile gangrenous ecthyma; Pemphigus gangrænosus; Multiple cachectic gangrene of the skin; Fr., Ecthyma térébrant.

The name varicella gangrænosa was given to this affection by Sir Jonathan Hutchinson, who first called attention to it, because of its occasional association with varicella, but, as has been shown by Crocker, Elliot and others, it may occur quite independently of that disease.

Symptoms.—When it follows varicella the varicellous lesions, instead of drying up and disappearing in the ordinary manner, become covered with brown or blackish crusts surrounded by a bright-red areola beneath which ulceration takes place. This ulceration continues to extend peripherally and in depth, for a time producing grayish or black eschars which, when cast off, leave round or oval sharp-cut ulcers

varying in size from that of a pea to a coin. As they enlarge in circumference, adjacent lesions occasionally unite to form serpiginous ulcers which are sometimes of considerable extent.

The gangrenous lesions are found for the most part in those regions in which the varicellous eruption is most abundant, such as the head, face and trunk. Occasionally it follows vaccinia and the eruption is then found in the neighborhood of the vaccination, which, however, is usually not attacked. When it occurs as an independent affection the buttocks and the thighs, more especially the former, are the regions usually affected where it begins as small papulo-pustules which are soon covered with a crust and pursue the same course as the lesions already described. The number and size of the lesions vary considerably. Many of the cases are mild, with scanty eruption and superficial ulceration (Crocker), or the lesions are bullous with purulent contents; in such cases, especially if the eruption is abundant, the constitutional symptoms are most pronounced, often septic in character, and death may follow.

Etiology.—The disease is essentially one of infancy and early childhood, occurring most commonly in the first year, rarely later than the third. Crocker found it much more frequent in female children than in male children, but the experience of other observers does not coincide with this observation. In a certain proportion of cases, as has already been observed, it occurs as a sequel of varicella and occasionally follows vaccination; it may also follow other eruptive fevers, such as measles. Many of the children are ill-nourished or exhibit symptoms of syphilis or tuberculosis. A variety of microörganisms have been found, such as staphylococci, streptococci, the bacillus pyocaneus (Ehlers, Hitschmann, Kreibich), and the bacillus ramosus (Veillon and Halle); but as none of these are constantly present it is not likely that they are the immediate cause of the malady.

Pathology.—Although a specific organism has not yet been found, there is but little doubt that the disease is due to the invasion of the skin by some microörganism, perhaps not always the same, which finds ready entrance because of the preceding general infection.

Diagnosis.—The age of the patient, most commonly an infant; the association of the affection with varicella or measles; the presence of vesico-pustules or pustules which are soon transformed into punched-out ulcers, are features so characteristic that the disease is usually readily recognized.

Prognosis.—In the majority of cases recovery takes place, but when the infant is ill-nourished or enfeebled by previous disease, and more especially when the lesions are numerous and large, with symptoms of sepsis, the prognosis is grave.

Treatment.—In severe cases every effort should be made to support the patient's strength; suitable nourishment should be given at short intervals and when necessary, stimulants. Locally the lesions should be covered with some antiseptic dressing, such as a saturated solution

of boric acid or very weak bichloride solution, 1 : 5000, until the sloughs have come away, when the ulcers may be covered with some stimulating ointment, such as aristol, five to ten per cent., europhen in the same strength, or these may be used as dry powders dusted lightly over the surface.

DERMATITIS GANGRÆNOSA ADULTORUM

Under the above title are included a number of forms of gangrene of the skin which differ more or less widely from one another in their cause and clinical symptoms. The cases which have been reported from time to time under a variety of names, such as acute multiple gangrene of the skin, disseminated gangrene, gangrenous urticaria,

FIG. 55.—Infectious multiple gangrene—forearm.

hysterical gangrenous zoster, occurring for the most part in girls and women who present the stigmata of hysteria, do not, in the author's opinion, properly belong here, but will be considered under factitious dermatitis.

Symptoms.—Multiple gangrene of the skin is for the most part a disease of adults, although it may also occur in children. It may begin as scattered vesicles or pustules, usually surrounded by a well-developed inflammatory halo, which rapidly enlarge and are soon covered with a black crust, beneath which ulceration of varying extent takes place. In a case under the author's observation some years ago the disease was distinguished by small red papules and vesicles which,

as they increased in size, resembled closely a variolous pustule. They soon were covered with a thick black crust beneath which an extensive and rapidly spreading ulceration went on (Fig. 55). The gangrene is sometimes preceded by erythematous patches or bullæ which speedily become gangrenous sloughs.

Etiology and Pathology.—This variety of gangrene may follow such general infections as typhoid and scarlet fever, or it is at times associated with a local infection situated at points more or less remote from the skin, as in a case reported by Crocker, in which the cutaneous disease followed a suppurative affection of the vagina. In other cases it is the result of a direct local infective process, as in the author's case referred to above, in which the gangrenous lesions followed a local infection from a wound made with an old meat-hook, and in which large numbers of an unidentified bacillus were present. Rotter and Waelsch have also reported cases in which pathogenic bacilli were found in the lesions; in the case of the latter the infection followed the use of an unclean hypodermic needle (Fig. 56).

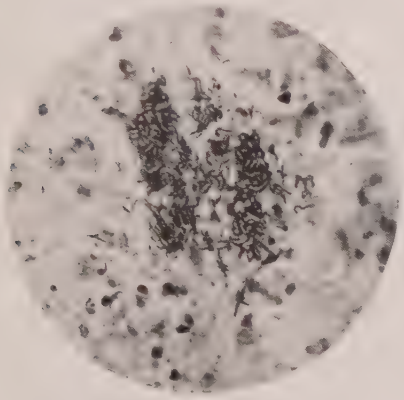


Fig. 56.—Bacilli in multiple gangrene of skin. Case shown in Figure 55.

Prognosis. — The prognosis is usually favorable except in the cases in which numerous and extensive areas of gangrene are formed.

Treatment. — The gangrenous patches should be continuously covered with moist antiseptic dressings frequently renewed until the necrotic tissue separates. The resulting ulcers should be treated with aristol, iodoform or europhen, either in ointment or dusting powders.

DIABETIC GANGRENE (DERMATITIS GANGRÆNOSA DIABETICORUM)

Gangrene of the skin is an occasional complication of diabetes following directly or indirectly upon some injury, often trivial, or some one of the many forms of inflammation of the skin which are common in diabetic subjects. In exceptional cases it appears spontaneously without any perceptible previous alteration of the skin. When it results from an injury the skin becomes livid or black, its temperature is lowered, vesicles and blebs often appear filled with a thin bloody fluid and a slough soon forms, which is cast off after a time, leaving an ulcerating surface. Instead of appearing at once the necrosis may be preceded for a time by more or less marked inflammatory symptoms. Occasionally it follows the inflammations which are so common about the genitalia of both sexes, being especially apt to attack the prepuce. In those cases in which it appears without any previous alteration of

the skin, it occurs as variously sized patches, occasionally symmetrically arranged, as in Raynaud's disease. As bullo-serpiginous diabetic gangrene, Kaposi described a peculiar form characterized by the formation of blebs spreading in a serpiginous manner beneath which gangrene occurred. The gangrene may be preceded by neuralgic pains which are followed by lividity of the skin, lowering of the temperature, and gradual loss of sensation. It may be of the moist or dry variety, but is most often the former, and is situated usually upon the lower extremities, beginning upon the toes, but the upper extremities and the trunk may also be attacked. There may be but a single lesion or there may be a number situated on one or both sides of the body.

Etiology.—The presence of sugar in all the tissues of the body especially predisposes them to inflammation and greatly lowers their powers of resistance to microbic invasion, so that slight injuries or infections are apt to result in the death of the part affected. The spontaneous form of gangrene is the result of secondary changes in the vessels or disease of the nervous system interfering with its trophic functions.

Treatment.—The same general treatment should be employed in diabetic gangrene as in diabetes, paying particular attention to the patient's dietary; supporting measures, tonics and stimulants should also be employed. Locally the treatment is the same as for the other forms of gangrene already described.

DERMATITIS GANGRÆNOSA SYMMETRICA (RAYNAUD'S DISEASE)

Synonyms.—Raynaud's disease; Local asphyxia; Fr., Asphyxie locale et gangrène symmetrique des extrémités; Ger., Raynaud'sche Krankheit (Plate XIII).

Definition.—A disease distinguished by paroxysmal attacks of local syncope alternating with local asphyxia, situated upon the extremities, terminating sooner or later in gangrene of the skin and subcutaneous tissues.

Symptoms.—This infrequent affection, which was first recognized and described as a clinical entity by Raynaud in 1862, usually presents three quite distinct stages: first, local syncope; second, local asphyxia, and third, the final stage, gangrene; the first and last of these stages may be absent or ill-defined. It begins with the more or less complete arrest of the circulation in one or several fingers of both hands or of the toes of both feet; quite commonly both fingers and toes are affected. These quite suddenly become dead-white, cold to the touch, and more or less devoid of tactile sensibility; not infrequently there is also moderate pain, usually of a burning character (stage of local syncope). After a period varying from some minutes to some hours the pallor disappears and is succeeded by a dusky redness which may become slaty blue or almost black, and with this change in color there

PLATE XIII

Raynaud's disease.

is usually severe burning and lancinating pain (stage of local asphyxia). The asphyxia may disappear within a short time and the parts resume their normal appearance, or it may terminate in gangrene of the skin of either the moist or dry form usually preceded by the appearance of vesicles and blebs filled with bloody fluid. The sequence and severity of the symptoms vary a good deal. In the mildest cases local syncope may be the only symptom, often affecting but a single finger, and disappearing in the course of a short time; to this form the name "dead fingers" is commonly applied. In a certain small proportion of cases the ischæmia persists for a considerable period, terminating finally in ulceration of the finger-tips without the appearance of local asphyxia. On the other hand, the asphyxia may be the first symptom noted. The extent of the gangrene varies from superficial necrosis of the tips of one or more fingers to the death of an entire phalanx, or in rare cases of a whole finger. Instead of gangrene marked trophic disturbances may appear: after repeated attacks the fingers become thin and tapering, the skin becomes adherent to the underlying parts, and the joints stiff (sclerodactylia); or instead of being thin they may become thick and club-shaped with stubby ends and deformed nails. While symmetry in the distribution of the gangrene is the rule there are occasional exceptions; Raynaud himself observed asymmetrical cases and more recent observers have also described them.

The paroxysms are usually more frequent and more pronounced in cold weather and may often be brought on by immersing the hands in cold water. Occasionally the attacks exhibit a marked periodicity, coming on with great regularity at definite intervals.

As a rule there are no general symptoms, but exceptionally there may be headache, loss of appetite and some elevation of temperature either preceding or accompanying the paroxysm, and hæmoglobinuria or intermittent albuminuria may also be present.

Etiology.—It occurs at all ages, but is most frequent in the second and third decades. Females are much more frequently affected than males, the proportion being, according to Munro, two of the former to one of the latter. Exposure to cold is reckoned among the occasional causes, and as has already been observed, it is much more likely to occur in winter than in summer. It has been observed to follow various diseases of the nervous system, of the cardiovascular system, and infections, such as diphtheria, typhoid and scarlet fever, tuberculosis and syphilis. In recent years there has been a notable increase in the number of cases reported in which syphilis was present; and the present tendency is to attribute a prominent rôle to this infection as a causative factor. In a considerable proportion of cases it is associated more or less closely with scleroderma, in no less than 7 per cent. according to Munro; and the author has recently called attention to the relatively considerable number of cases in which it is associated with lupus erythematosus. In all probability it is due to some toxin, perhaps not always the same, which especially affects the vascular walls.

Pathology.—The local syncope is the result of vasomotor spasm and the gangrene is due to the shutting of the blood supply. It is still a mooted question whether the vascular disturbance is of central or peripheral origin. The tissue changes are those which are seen in other forms of gangrene of the skin.

Diagnosis.—It is to be distinguished from other forms of gangrene by its symmetrical distribution and by the pronounced vasomotor symptoms which precede the appearance of the gangrene.

Prognosis.—While there may be but a single attack, this is unfortunately not the usual course of the malady, but the paroxysms continue to recur for an indefinite period, not uncommonly for years, with the loss of the ends of one or more fingers, of an entire phalanx, or in exceptional cases of an entire member. In long-continued cases which do not terminate in gangrene the trophic alterations in the fingers may be so extensive as to interfere very seriously with their use. When considerable areas of gangrene develop death may result from exhaustion or sepsis, particularly in the feeble and elderly.

Treatment.—The patient's general condition should be carefully looked after; he should have an abundance of nutritious food and should spend considerable time in the open air. If possible the winters should be spent in a warm equable climate, or if this is not possible he should be thoroughly protected against cold. In cases in which syphilis is demonstrable or suspected, and it should always be looked for, thorough trial should be made of salvarsan, mercury and the iodides. Nitroglycerin and amyl nitrate have been recommended for the purpose of relaxing vascular spasm, but they have proved of little or no use. Raynaud recommended galvanism, applying one electrode over the spine, the other on the affected extremity. During the paroxysm frictions with stimulating liniments may be used for the purpose of improving the circulation and relieving pain; for the latter purpose cold applications are sometimes useful. The treatment of the gangrene is to be conducted according to the usual surgical methods.

DIPHTHERIA OF THE SKIN

Diphtheria of the skin may occur as a primary or a secondary affection, the latter as a concomitant or sequel of pharyngeal and nasal diphtheria. While both forms are infrequent, the secondary is much more common than the primary and has long been known, Chomel having called attention to it as long ago has 1759. The primary form, which has only recently been recognized, has been studied by Neisser, Adler, Marschalko, Schucht, Knowles and Frescoln, and a few others.

In primary diphtheria of the skin a variety of cutaneous lesions may be present, none of which are characteristic. It may occur as an impetiginous or ecthymatous eruption followed by ulcers, resembling the ecthyma of infants; in rare cases vesicular and bullous eruptions have been present. In the remarkable case reported by Slater, a widespread vesicular eruption resembling varicella somewhat, had existed

for three years; the Klebs-Loeffler bacillus was recovered from the lesions and the eruption disappeared after the use of diphtheria antitoxin.

Diphtheria of the skin, secondary to pharyngeal and nasal diphtheria, usually begins at the site of a wound or abrasion forming an ulcer of variable extent and depth, the bottom of which is covered by a grayish membrane in which the diphtheria bacillus is present. At times extensive destruction of the skin and subcutaneous tissues occurs, with the formation of grayish or blackish sloughs. More or less constitutional disturbance is present and not very infrequently death follows. Occasionally ecthymatous and ulcerative lesions or bullæ may occur, just as in the primary form.

A definite diagnosis can only be made by the aid of the microscope and cultures, since, as already observed, the eruptive lesions are not distinctive.

As Knowles and Frescoln point out, it is important to distinguish between the Klebs-Loeffler organism and the pseudodiphtheria bacillus in making the diagnosis.

When the presence of the former organism in the lesions has been demonstrated, diphtheria antitoxin should be administered at once

DERMATITIS

Definition.—Inflammation of the skin.

While inflammation of the skin is a frequent and prominent symptom of many cutaneous affections, the term is applied chiefly to those inflammations which are the result of various morbific agencies acting locally upon the skin. It may arise from mechanical violence, dermatitis traumatica, from heat, dermatitis calorica, from cold, dermatitis a frigore, frost-bite, or from contact, direct or indirect, with various plants and chemical substances, dermatitis venenata.

DERMATITIS TRAUMATICA

Under this term are to be included all such inflammations as follow breaches of continuity in the skin, made by cutting instruments either accidentally, or purposely as in surgical operations, excoriations, such as frequently are inflicted upon the skin in many itching diseases by the nails or by rubbing, after abrasions or wounds resulting from violence or from bites of animals and insects. The inflammation which may follow such traumata may present all grades of severity and may be accompanied by such subjective symptoms as burning and pain, and in severe and extensive cases by more or less constitutional disturbance. Very commonly the severe forms are not the direct result of the traumatism, but are due to the secondary infections which frequently follow injuries.

In the milder forms of traumatic dermatitis the frequent application of an evaporating lotion, such as equal parts of alcohol and water, or if there is pain, weak lead-water will usually suffice. In the

severe grades the inflamed part should be put at rest and when situated upon an extremity, elevated. The inflamed area should be covered with gauze wet with a saturated solution of boric acid, either hot or cold, according to the relief afforded, frequently renewed, or lead-water and laudanum may be employed in the same manner.

DERMATITIS CALORICA

Dermatitis calorica, or burn of the skin, presents all degrees of severity, from mild erythema to complete destruction of the skin and subcutaneous tissues. Three degrees of burn are recognized: In the first the skin is reddened with or without slight swelling, and there is more or less burning pain. In the mildest forms of this degree the symptoms usually subside spontaneously in the course of a few hours. In the second degree the symptoms are much more marked: the skin is reddened, swollen, with a more or less abundant transudation of serum beneath the epidermis, forming vesicles and blebs filled with clear fluid; the pain is usually severe. In the third degree the skin is completely devitalized and is transformed into a brownish or black eschar. In burns of the second and third degrees, involving any considerable extent of surface, there is usually more or less constitutional disturbance. In extensive burns the patient frequently suffers from profound shock from which he may not recover, and complains but little of pain. In burns of the second and third degrees suppuration frequently takes place, and when considerable areas are involved this is usually accompanied by fever and frequently by symptoms of sepsis. Burns involving one-half of the surface or more are usually fatal, death occurring often within the first few days. The cause of death in such cases is not well understood, various explanations being offered, such as overheating of the blood and consequent paralysis of the heart, destruction of the red blood-cells by overheating, or the production of toxic substances in the eschar which are absorbed into the circulation, but none of these is altogether satisfactory. In the death which occurs late in burns the fatal termination is the result of sepsis or exhaustion from long-continued suppuration. Gastric and duodenal ulcers, especially the latter, are occasional complications of burn.

In mild burns of the first degree the application of cold water or lotions of weak lead water, followed by a simple dusting powder, will usually afford relief. A solution of sodium bicarbonate, five to ten grains (0.32 to 0.65) to the ounce (32.0), applied on compresses of gauze, will often afford great relief to the pain; or a one per cent. solution of picric acid may be painted over the burned area or applied on gauze. When blebs are present these should be carefully evacuated. A popular and useful application is the so-called Carron oil or linimentum calcis composed of equal parts of lime-water and linseed oil, which should be applied on lint or gauze. Olive oil may be substituted for the linseed oil with equally good results and is more agreeable.

Very recently covering the parts with paraffin of a melting point of about 50° C., to which oil of eucalyptus or other antiseptic has been added in varying proportions, has been employed with remarkably good results. It should be applied in the melted condition with a soft flat brush or sprayed on with a suitable apparatus. In severe and extensive burns continuous immersion in a water-bath, as employed by Hebra, is a useful procedure, affording the patient much relief. In cases in which extensive suppuration occurs fomentations of warm saturated boric acid solution are very useful and cleanly, favoring the separation of sloughs and eschars. In case of shock, stimulants should be judiciously employed. When long-continued suppuration over extensive areas follows, every measure looking to the preservation of the patient's strength is to be employed and especial care taken to prevent sepsis.

DERMATITIS A FRIGORE

Synonyms.—Dermatitis congelationis; Congelatio.

A dermatitis varying from a mild and transient erythema to gangrene may be produced by exposure to low temperature. For obvious reasons it is seen by far more frequently upon the hands and feet than upon any other portion of the body. On the hands the fingers are most frequently affected, on the feet the toes and heels.

In the mildest form affecting the fingers and toes the skin is dusky-red, with burning, itching and pain. After a short time, which varies according to the degree of the inflammation, the redness disappears, and the itching and burning grow less, although these are apt to return upon exposure to cold even of moderate degree (erythema pernio, q. v.).

When the exposure has been more prolonged and the temperature low, the skin on the exposed parts is swollen and red and vesicles and blebs appear which may be followed by ulceration of varying extent and depth. Although the parts are numb at first, decided pain appears with restoration to the normal temperature.

After long exposure to very low temperature the skin becomes hard and white at first, later it becomes bluish or blackish and blebs of considerable size are formed, followed by ulceration and gangrene; or the parts may be so completely devitalized that gangrene occurs at once, a line of demarcation forms after a time, and the frozen parts are cast off by suppuration.

The treatment of the milder forms of frost-bite has already been referred to (*vid.* erythema pernio). In the severe forms great care should be taken not to restore the warmth of the parts too quickly, as great pain, severe inflammation and ulceration are likely to follow. The frozen parts should be rubbed with snow for some time or placed in cold water, the temperature of which should be slowly raised until it is the temperature of the room. Blebs should be opened and evacuated and subsequent ulcers and sloughs covered with slightly stimulating and antiseptic ointments, such as a two per cent. ointment of salicylic

acid, or a twenty per cent. ointment of boric acid. The occurrence of extensive gangrene is to be treated according to surgical principles.

ACRODERMATITIS HIEMALIS

Synonyms.—Acrodermatitis pustulosa hiemalis (Crocker).

Some years ago Crocker described an affection characterized by an eruption situated exclusively upon the hands, particularly about the knuckles and sides of the fingers, occurring only in the winter. It began with small, red, firm papules, some of which after enlarging slightly became pustules, crusted over and left scars after the crusts fell; others remained papules and eventually disappeared without leaving any trace. If punctured soon after their appearance, a watery fluid escaped from them. The number of lesions was usually quite small; they came out in crops and ran a course of about a fortnight, although when the weather was cold they lasted much longer. The eruption recurred year after year, in one case for as long as ten years, in the winter and disappeared with the return of mild weather. Although Crocker was the first to call attention to it in a formal way, cases of it had been described previously by Cavafy and Allen. Cavafy's case was characterized by a winter-recurring vesicular eruption on the hands; Allen reported his as one of "necrotizing chilblains." The latter was distinguished by an eruption of nodules on the hands which appeared in winter only, or after washing the hands in cold water; they underwent central necrosis, leaving a scar, and resembled the nodules of the papulo-necrotic tuberculide.

In recent years the author has seen a number of cases, which, although differing in some minor features from those of Crocker, yet resembled them sufficiently to justify placing them in the same category. The eruption was confined to the hands and consisted of small erythematous patches, dull-red papules, and a few discrete vesicles, on the fingers chiefly. It appeared in the autumn, continued throughout the winter with exacerbations during cold weather, and disappeared with spring. Unlike Crocker's cases, there was never any scarring. Itching and burning were present in the majority of the cases, sometimes of a severe character.

The affection is apparently related to chilblain on the one hand, and occasionally, on the other, to the papulonecrotic tuberculide. In all the author's cases the extremities became a dusky bluish hue when exposed to cold, the so-called chilblain circulation. Crocker thought his cases a variant of the folliclis of Barthélemy.

While there is no doubt about the influence of cold weather upon its occurrence, it has seemed to the author that other seasonal influences besides temperature must be concerned in its production, since an examination of the records of the Weather Bureau has shown that the temperature of the localities in which the author's patients resided was lower in the spring months, when the disease disappeared, than in the autumn months, when it began.

The only treatment which has been at all effective in the author's hands has been the application of a twenty-five per cent. solution of ichthyol in water; this was painted on with a brush every night before retiring and in the morning. If the staining was objectionable it was washed off in the morning with hot water and the morning application omitted.

DERMATITIS VENENATA

Definition.—An inflammation of the skin due to contact with various plants, chemical substances, or other substances of an irritant character.

Contact with certain plants, many drugs, and chemicals will excite in the skin an inflammation varying from a mild erythema to gangrene, the result depending upon the susceptibility of the individual, the character of the offending agent, and the duration of the contact.

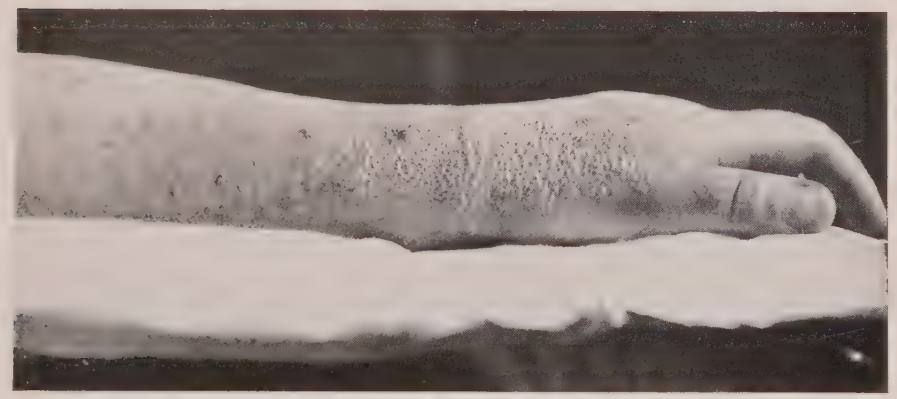


FIG. 57.—Dermatitis venenata.

Symptoms.—Every variety of cutaneous lesion, erythema, papules, vesicles, pustules, blebs, and wheals, may occur in this variety of dermatitis. It usually begins with redness and some swelling of the skin, limited at first to the area which has been in contact with the irritant. On this reddened area innumerable small acuminate vesicles appear (Fig. 57), which by coalescence form larger vesicles, and blebs in the severer form of the disease. Although the inflammation is at first limited to the parts which have been in contact with the irritant substance, it often spreads far beyond this. There is frequently an abundant discharge of serum, and in the severe cases pus, which dries into yellow crusts. The inflammation is always accompanied by more or less burning and pain, which in many cases are quite severe. When parts of the skin are affected in which there is an abundance of loose connective tissue, as the eyelids and male genitalia, there is often great œdema, completely closing the eyes and swelling the penis and scrotum to enormous proportions.

This variety of inflammation of the skin is far more frequent, in the author's opinion, than is generally recognized. Those cases due to the so-called poison ivy, or *rhus toxicodendron,* are usually recognized without difficulty, but there are many forms of the disease which are erroneously regarded as acute recurrent eczema; indeed, the author is quite convinced that many, if not most, of the cases of so-called acute eczema are in fact a dermatitis due to contact with some unsuspected plant, dye, or drug with which the patient comes in contact. The author has seen so many cases of what had been regarded as recurrent eczema prove, on careful investigation, to be due to some dye in a fur, some hair-wash, or some window plant, that he is always suspicious of the correctness of the diagnosis of eczema in those cases in which there are frequent acute recurrences.

Etiology.—The number and variety of the substances which may give rise to dermatitis when brought into contact with the skin are so great that a complete list of them would take up more space than can be devoted to them here, but the following are the more important:

Among the plants the first place must be given to the several varieties of Rhus, *Rhus toxicodendron,* or poison ivy, and *Rhus venenata,* poison sumach, the former being an especially common cause of inflammation of the skin in the United States. In England the Primrose, *Primula obconica,* is the most frequent source of plant dermatitis, and is a fairly common cause in the United States, although only comparatively recently recognized as a source of this form of dermatitis. Other plants which occasionally inflame the skin are the Nettle, *Urtica dioica,* Smartweed, and *Rhus vernix,* used in the making of Chinese lacquer. Under the name of "lily rash," Walsh a few years ago described a dermatitis prevalent among flower-pickers in the Scilly Islands due to the lily.

It must be borne in mind that a certain susceptibility of the individual is necessary to the production of dermatitis even with such plants as the Rhus, some individuals being quite immune.

Among the chemical substances which are a more or less frequent cause of dermatitis venenata are certain dyes, particularly many of the aniline dyes, salts of chromic acid and picric acid, photographic developers, such as metol, which are usually seen in those engaged in certain trades, or in those who have worn articles of clothing, such as underwear or stockings, dyed with them. Many medicinal substances are to be included in this list, such as the various salts of mercury, especially corrosive sublimate, iodoform, carbolic acid which may produce gangrene when the contact with the skin is prolonged even in weak solutions, formaldehyde which may be used for a considerable period before it produces any disturbance, but when it has once excited a dermatitis will continue to do so even in very minute quantities, the skin becoming increasingly sensitive to its action. Various domestic remedies, such as arnica, turpentine, mustard and various liniments containing these, will, in certain individuals, cause a more or less severe inflammation of the skin. Tincture of iodine or ointments containing

iodine, hair washes, particularly those which contain quinine or certain coal-tar derivatives which darken the hair, are quite commonly the unsuspected source of inflammation of the face and neck. Among aniline dyes paraphenylendiamine, which is used to dye furs and is the active ingredient in a number of proprietary hair-dyes, is a frequent cause of a most violent dermatitis situated usually upon the neck and face. The degree of susceptibility to these various substances varies enormously in different individuals. In the case of a physician

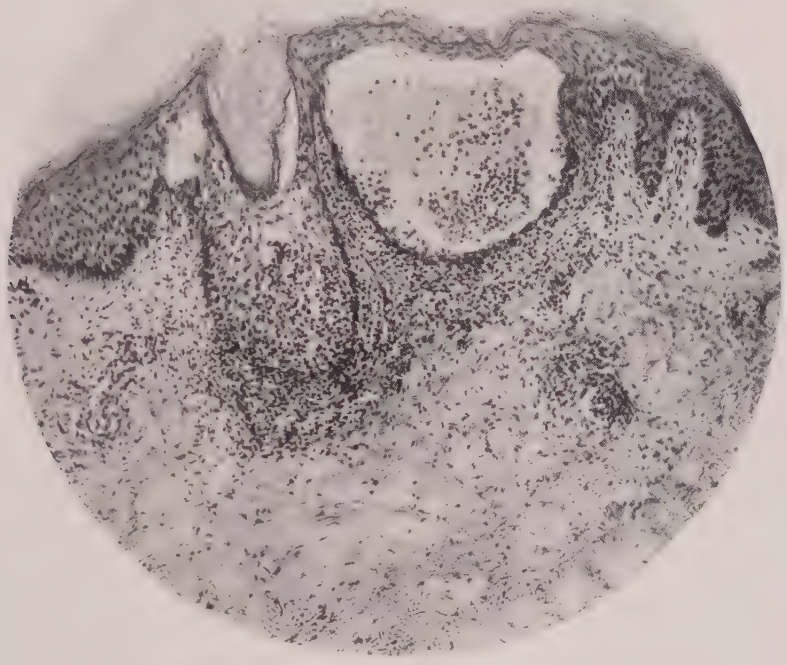


FIG. 58.—Dermatitis venenata. Vesicles in the rete mucosum with lymphoid cells in upper part of the corium. The dark line surrounding the vesicle is pigment, the patient being a negress.

under the author's observation some years ago, who was extremely susceptible to the action of iodoform, the mere picking up of a piece of iodoform gauze with the thumb and finger was followed in a few hours by a dermatitis which spread over the entire cutaneous surface.

For obvious reasons dermatitis venenata usually attacks the exposed surfaces, such as the hands, forearms and face, but it may spread by contiguity to other parts, or be transmitted by the hands. In Rhus poisoning the genitalia in the male are very commonly attacked, the irritant being carried to the region by the patient's hands, and penis and scrotum are frequently swollen to enormous proportions, much to the patient's alarm.

Pathology.—In a case of Rhus dermatitis, with an abundant vesicular eruption, in a negress which the author studied histologically some years ago, the rete was slightly broader than normal as the consequence of a moderate intercellular œdema and contained vesicles which were situated in its lowest portion; these contained a small quantity of coagulated fibrin in which were entangled a moderate number of leucocytes. The papillary body and the subpapillary portion of the corium to a considerable depth, were occupied by a very pronounced exudation of lymphoid cells with a few polynuclear leucocytes most marked about the vessels, the follicles and the ducts of the sweat-glands (Fig. 58).

Diagnosis.—The disease with which dermatitis venenata is most apt to be confounded is acute eczema, and the differential diagnosis is not always easy, but the acuteness of the course of the former, the frequent severity of the inflammation with the formation of blebs, its situation upon exposed parts, and the knowledge that the patient has been in contact with an irritant or is employed in a trade or occupation which brings him into contact with chemical or other substances which are known to excite a dermatitis, will usually serve to differentiate the two affections. In ivy poisoning, or other plant poisoning, the frequent occurrence of streaks of erythema or vesicles where the branches of the plant have come in contact with the skin is a significant symptom and the involvement of the penis and scrotum in the male in the inflammation is likewise a useful diagnostic point.

Prognosis.—While most cases of dermatitis venenata run an acute course, subsiding spontaneously in the course of a week or two, yet in those with an eczematous tendency the dermatitis may terminate in an eczema of indefinite duration, especially if improperly treated. In those forms of dermatitis which arise from the use of irritant substances employed in various trades, frequently nothing but the complete abandonment of the occupation will insure freedom from the dermatitis. Too long persistence in exposure to the offending substance frequently gives rise to a chronic eczema which may continue for months and even years after the removal of the cause—so-called trade-eczema.

Treatment.—Local treatment is alone required. A saturated solution of boric acid to which has been added one-half to a drachm (2.0 to 4.0) of subcarbonate of bismuth or oxide of zinc, freely and frequently mopped on the inflamed skin, will often afford decided relief. Black wash (lotio nigra) is another useful application employed alone or followed by an ointment composed of two drachms (8.0) of bismuth to six drachms (24.0) of unguentum aquæ rosæ, which is far more agreeable and effective than the official zinc ointment commonly employed. Alkaline lotions containing three to five grains (0.20 to 0.32) of sodium bicarbonate or borax are frequently of service; these may be used in conjunction with a dusting powder of talc and oxide of zinc or bismuth. Later, when the symptoms are less active, mild ointments, such as the cold cream and bismuth, may be used alone. Many specifics have been vaunted in the treatment of Rhus poisoning, but there is no evidence

that any of these have any specific properties. When seen early after exposure, the skin should be carefully washed with soap and warm water and then some one of the lotions already mentioned employed. Other lotions which are useful in this variety of dermatitis are dilute lead water; fluidextract of grindelia robusta, one-half to one drachm (2.0 to 4.0) to the ounce (32.0) of water; sodium hyposulphite, one-half to one drachm (2.0 to 4.0) to the ounce (32.0). When blebs are present these should be carefully evacuated with a sterile needle to prevent their rupture, since when torn large, raw surfaces are left which readily become infected.

FIG. 59.—Arsenical keratosis. Patient had taken Fowler's solution in large doses for a number of years for dermatitis herpetiformis.

DRUG DERMATOSES

Synonyms.—Drug eruptions; Dermatitis medicamentosa; Fr., Éruptions medicamenteuses; Ger., Arzneiexantheme.

Definition.—Diseases of the skin, for the most part, but not invariably, of an inflammatory character, due to the ingestion or absorption of drugs.

Symptoms.—Disturbances in the skin as the result of the ingestion or absorption of drugs are of common occurrence, and present a wide diversity of symptoms. They are for the most part of an eruptive character, but also occur as sensory or pigmentary disturbances. Every form of cutaneous lesion may occur—erythema, diffuse or macular, papules, vesicles, pustules, blebs, hemorrhage, ulceration and gangrene may be produced by one drug or another. The commonest

variety of eruption is an erythema which may be more or less localized or general, may be diffuse or macular, or urticarial. Only a small number of drugs produce characteristic eruptions, so that it is often difficult, and at times quite impossible, to determine from the eruption alone what drug has produced it. The same drug frequently varies greatly in its effects in different individuals; in one it may produce a diffuse erythema, in another, urticarial wheals, in a third a vesicular eruption and in a fourth no eruption whatever. A small number, such as the salts of iodine and bromine, produce in most individuals a fairly uniform eruption, so that it is comparatively easy to recognize the cause. A striking peculiarity shown by many drugs is that the eruption is often not a matter of the amount taken; in susceptible individuals one or two doses, or at times a single small dose, will call it forth. The eruptions are for the most part general in their distribution and usually symmetrically arranged, but occasionally they exhibit a more or less pronounced predilection for certain regions; while commonly uniform they are often multiform. Occasionally the mucous membranes of the mouth and pharynx are involved along with the skin. Itching and burning are frequent subjective symptoms. In the majority of cases the symptoms are confined to the skin, but in a limited number considerable constitutional disturbance, with more or less elevation of temperature, accompanies the eruption.

The eruptions usually appear quite suddenly, soon after the drug has been taken, sometimes within a few minutes; in a considerable number of cases, however, they appear only after prolonged use. They usually disappear promptly after its suspension; or tolerance may be established and the eruption vanish, although the drug is continued. In a case of iodic purpura, repeatedly under the author's observation, the hemorrhage which appeared within twenty-four hours after beginning the iodide of soda disappeared within a few days, notwithstanding the continued administration of the drug. Exceptionally the eruption may persist for some weeks or longer after the drug has been suspended, owing, in most cases, to the slow elimination of the latter; the bromide eruptions usually continue for a considerable period after the administration of the salt has been stopped.

The following is a brief résumé of some of the eruptions produced by the drugs in common use with a few of the rarer ones: *

Acetanilid (Antifebrin).—Erythematous eruption, infrequent; when taken in considerable doses or for considerable periods in moderate doses cyanosis, most noticeable on the lips; common.

Antimony (Tartar Emetic).—Vesico-pustular eruption; uncommon.

Antipyrin.—Urticaria, occasionally after a single dose and within a few minutes, common, less frequently a morbilliform erythema; purpura, rare; in rare instances bullæ on the buccal mucous membrane.

* For a full consideration of the subject of drug eruptions the reader is referred to the monograph of Morrow as edited by Colcott Fox and published by the New Sydenham Society.

FIG. 60.—Arsenical pigmentation. Patient also had a mild arsenical keratosis of the palms.

The French have described a peculiar blackness of the penis following its administration, lasting for some time.

Antitoxin and Other Sera.—Frequently followed by eruptions most frequently of an urticarial character; less common scarlatiniform and morbilliform erythema, or multiform erythema; usually appear about six to eight days after administration, but may appear much earlier or later; occasionally show predilection for the region of the large joints which may be painful; severe itching with some constitutional disturbance with fever; common.

Atophan.—Scarlatiniform erythema.

Aspirin.—*Vid.* salicylic acid and its compounds.

Arsenic.—Great variety of eruptions—erythematous, papular,

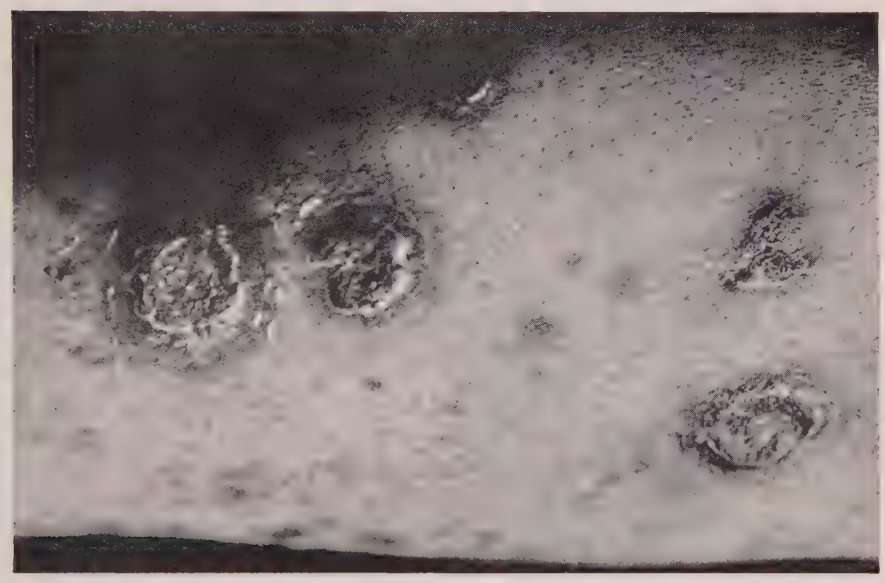


Fig. 61.—Bromide eruption (bromoderma) leg resembling late pustular syphiloderm. (Followed too prolonged use of a proprietary mixture containing a bromide.)

vesicular, pustular, hyperkeratosis and pigmentation; infrequent. A special form of hyperkeratosis affecting the palms and soles (Fig. 59). preceded often by hyperidrosis of these regions is peculiar to arsenic. It is characterized by small shot-sized horny elevations like small corns. A number of cases have been reported in which epithelioma has followed at the site of these keratoses. Arsenical pigmentation occurs as a diffuse or mottled, brownish or grayish, discoloration occupying the greater part of the trunk (Fig. 60). Keratoses and pigmentation occur only after prolonged use.

Belladonna (and its alkaloid *atropin*).—Scarlatiniform erythema, commonest type of eruption; especially in children; on face and upper part of chest; usually disappears quickly; may follow ingestion of drug or its absorption from plaster, or instillation of atropin solution into

conjunctival sac; the last may produce erysipelatous inflammation of lids and region about.

Benzoic Acid and Sodium Benzoate.—Erythematous and maculopapular; infrequent.

Boric Acid and Sodium Biborate.—Erythematous; occasionally follows use of boric acid solutions to wash out cavities, such as the bladder. Borax, when given internally for a considerable period, may produce a scaly eruption closely resembling psoriasis; unusual.

Bromides of Potassium, Sodium, Ammonium and Other Salts of Bromine.—Eruptions from bromides are common; most frequent type

FIG. 62.—Bromide eruption (bromoderma). Mother had taken a bromide in final month of pregnancy. Case referred to in text.

acneform; on face, chest and back, less frequently upon the extremities. Occasionally aggregated in elevated plaques studded with pustules. A characteristic lesion occurs in children as pea-sized and larger reddish nodules with a flat pustule on top which are quite solid. Papillomatous and verrucose patches resembling verrucose tuberculosis cutis or blastomycosis, also occur. Exceptionally the eruptions may be erythematous, papular, vesicular and in rare instances, bullous. They may occur in nursing infants whose mothers are taking the drug; and the author has seen an instance in which a characteristic and pronounced eruption was pro-

duced in a new-born infant by a bromide mixture taken by the mother in the last weeks of pregnancy, which was suspended at the birth of the infant (Fig. 62).

Chloral.—Erythematous, urticarial, less frequently vesicular, rarely bullous; after prolonged use petechiæ, ecchymoses, ulceration; infrequent.

Copaiba.—Most common type morbilliform erythema, less often scarlatiniform; occasionally resembling erythema multiforme; rarely, vesicular or bullous.

Digitalis.—Erythematous, papular, urticarial; rare.

Ergot.—Erythema, petechiæ, gangrene; only after long-continued use; may be caused by eating rye bread containing diseased rye.

Hyoscyamus.—Erythematous, urticarial, occasionally scarlatiniform, rarely pustular.

Iodine and the Iodides.—Common; usually as a papulo-pustular eruption resembling acne; occasionally furuncular, papillomatous, or vegetating as after the bromides; rarely vesicular, purpuric or bullous. In a middle-aged woman under the author's observation some years ago the administration of iodide of potassium was invariably followed by an intensely itching vesicular eruption limited to the palms. The bullous eruption is usually accompanied by grave constitutional symptoms and may terminate fatally; it, as a rule, occurs in those with cardiac or renal disease.

While the iodic eruptions are in the great majority of cases due to the ingestion of the alkaline iodides, they have been observed after taking the iodide of iron. In rare instances they have followed the external application of the tincture of iodine (Hodara). Iodoform may, in rare instances, produce an erythematous, vesicular or bullous eruption, either when given internally or when absorbed from surgical dressings.

Mercury and Its Salts.—Erythematous, vesicular, pustular; rare.

Opium and Morphine.—Macular or scarlatiniform erythema accompanied by severe itching; pruritus, often limited to the face, especially the nose, occasionally general; common.

Phenacetin.—Erythema, scarlatiniform or urticarial; infrequent.

Quinine.—Scarlatiniform erythema, urticaria, in rare cases vesicular or bullous. The scarlatiniform erythema may be accompanied by elevation of temperature and followed by extensive desquamation; occasionally produced by very small quantities.

Salicylic Acid, Salicylate of Soda, Salol, Aspirin.—Macular or scarlatiniform erythema, urticaria; infrequently vesicular, or bullous; rarely, purpura, gangrene.

Salvarsan.—Scarlatiniform or morbilliform erythema; vesicular or bullous; fairly common.

Silver Nitrate.—Slate-colored or bluish discoloration of the skin and visible mucous membranes; only after taking considerable quantities.

Sulphonal.—Erythema, macular or scarlatinoid; after prolonged use accompanied by hæmatoporphyrinuria.

Thallium Acetate.—More or less general alopecia.

Tuberculin.—Erythema, scarlatinoid or morbilliform; infrequent.

Veronal.—Diffuse or blotchy erythema, often accompanied by intense itching and burning, sometimes with elevation of temperature; infrequent, but not rare.

Etiology and Pathology.—We have but little exact information concerning the causes which predispose to drug eruptions and still less knowledge concerning the manner of their production. In many instances idiosyncrasy, in most cases congenital, but occasionally acquired, plays a prominent part. There is but little doubt that in the case of some drugs these act after the manner of foreign proteins and the eruptions which they produce are to be considered anaphylactic phenomena. Cole succeeded in passively transferring the idiosyncrasy to potassium iodide by serum, and Bruck (quoted by Cole) was able to passively transfer hypersusceptibility to iodoform and antipyrin from man to guinea pigs. Cardiac and renal insufficiency are occasionally predisposing factors.

The earliest investigators attributed the eruptions to the irritant effects of the drugs upon the glands of the skin by which they were eliminated, but it has been shown quite conclusively that the eruptive lesions are not confined to the region of the glands but occur on other parts of the skin as well. Behrend supposed that they were not due directly to the drugs themselves, but to toxic substances produced by them. Morrow was inclined to view them as being produced through the intermediation of the nervous system. Engman and Mook, in a study of the iodic and bromic eruptions, found that they were especially apt to occur at points of previous inflammation, and in tissues charged with the drug traumatism, pressure and quick changes in temperature might precipitate an eruption. They believe that a "local disturbance of the normal equilibrium between the iodine combined in the serum and the tissues . . . may be induced by various factors, and when it does occur the resultant product acts as a toxin which in its turn causes tissue irritation and the production of various local inflammatory symptoms . . ."

The histological changes present nothing special; they are those of a dermatitis of ordinary type.

Diagnosis.—In the presence of an unusual eruption the possibility of its drug origin should always be kept in mind, and inquiry made as to the drugs, if any, taken. Only a small proportion of drug eruptions present characteristic features, and consequently the diagnosis frequently offers considerable difficulty.

The localization of arsenical keratosis upon the palms and soles is so distinctive that its recognition usually presents no difficulty. Arsenical pigmentation may resemble the pigmentation of Addison's disease, but the absence of the marked asthenia, which distinguishes

PLATE XIV

Dermatitis factitia.

the latter, and of pigment in the mucous membranes, will serve to differentiate the two.

The scarlatiniform erythema of belladonna and atropin differs from the eruption of scarlatina by its diffuse instead of punctiform character and by the absence of tongue, and throat symptoms and of fever.

The acneform eruption produced by the iodides is usually much more general in its distribution than ordinary acne, and the bromide eruption is often accompanied by characteristic plaques and flat pustulonodular lesions, especially in children. It should be borne in mind that in nursing infants the source of the bromides may be the mother's milk.

When the eruption of quinine is scarlatinoid, is accompanied by fever and followed by desquamation, its differentiation from scarlet fever may be very difficult, but there is often a history of previous attacks of a similar character.

The serum eruptions at times resemble scarlatina, but are more commonly multiform and are frequently accompanied by arthritic symptoms.

Prognosis and Treatment.—The prognosis of most drug eruptions is very favorable; they usually disappear promptly after the suspension of the drug producing them. Exceptions are the bullous eruptions following the iodides in those with renal or cardiac disease, which may be accompanied by grave constitutional symptoms and may result in death. The bromide eruptions frequently last for a considerable period after the drug has been withdrawn.

As has already been observed, the eruptions usually disappear promptly with the discontinuance of the drug. When itching and burning are prominent symptoms, the same lotions and ointments serviceable in other itching eruptions, such as lotions and ointments of menthol and phenol, may be used. The coincident administration of arsenic, as Fowler's solution, with the iodides and bromides, for the purpose of preventing or diminishing the toxic effects of these upon the skin has been recommended, but the author has not been able to convince himself of its efficacy.

DERMATITIS FACTITIA

Synonyms.—Dermatitis artefacta; Feigned eruption (Plate XIV).

Definition.—An artificial eruption, usually of an inflammatory character, occurring for the most part in young women, produced by the patient herself through a morbid desire to excite interest or sympathy, or for the purpose of escaping some disagreeable duty.

Symptoms.—Feigned eruptions present great variation in their appearance, which depends in part upon the agent employed to produce them and in part upon the caprice or ingenuity of the patient. The commoner forms are variously sized erythematous patches which may be round or angular in shape, often the latter, superficial abrasions, and linear excoriations. Less commonly the eruption consists of patches of pustules, discrete bullæ, and in exceptional instances there

is superficial gangrene of the skin. The lesions are rarely numerous, are often solitary, and the eruption as a whole frequently differs so

Fig. 63.—Dermatitis factitia.

much from the usual forms of cutaneous disease that the experienced observer is at once impressed with its artificial character. Although the eruption may be situated upon any portion of the body accessible

to the patient's hands, it is most frequently seen upon the extremities; when situated upon the trunk it is almost always upon the anterior surface, but exceptionally it is seen upon the back (Fig. 63).

A highly significant fact, and one to which but little attention has been paid, is that in a considerable number of instances an accidental injury, such as a burn with a hot iron or with some caustic substance, a prick with a needle or other sharp instrument, has preceded the artificial lesion. In a case recently under the author's observation, in which coin-sized black circular eschars appeared from time to time upon the anterior surface of the thigh of a neurotic girl fifteen years of age, the first lesion was an accidental burn of a finger with "concentrated lye." When suddenly and unexpectedly accused of producing the eschars, she admitted that she had done so, using the lye for the purpose. Certain forms of gangrene of the skin which have been described from time to time by various authors (Doutrelepont, Kaposi, Quinquaud, and others) under the names of acute multiple gangrene of the skin, gangrenous urticaria, hysterical gangrenous zoster, are believed by most authors to have been examples of factitious dermatitis, a belief with which the author fully agrees. Very recently Matzenauer and Polland, under the name dermatitis symmetrica dysmenorrhœica, have reported a number of cases, occurring for the most part in young girls, characterized by linear patches of erythema and excoriations, wheal-like lesions, and exceptionally by superficial necrosis of the skin. A study of the histories of these cases, and more especially of the excellent illustrations which accompany the report, leaves but little doubt in the author's mind that the eruptions were factitious.

Etiology.—The patients are, in the great majority of instances, young women who present the stigmata of hysteria. In men the eruptions are seen most frequently in the inmates of prisons or in garrisons and are produced to avoid the performance of some disagreeable duty or to escape work. In rare instances they occur in males who present symptoms of hysteria. All kinds of irritant substances, liquid and solid, are employed, such as mustard, turpentine, carbolic acid, croton oil which produces a pustular eruption, lye, and the mineral acids. Abrasions and excoriations are usually produced by mechanical means, such as friction with some hard substance, or with the fingers or finger-nails, as in the so-called neurotic excoriations described by Wilson and Sangster and Fox.

Diagnosis.—In many cases the eruption is so obviously artificial that the diagnosis is readily made by anyone familiar with the ordinary diseases of the skin; on the other hand, it may be extremely difficult. Even when quite convinced of the factitious character of the lesions, positive proof of it is often difficult, if not impossible, to obtain. The patient rarely admits the imposture and it is often most difficult to prove it. Features of diagnostic importance are: The frequent limitation of the eruption to the left side of the body (to the right side in

left-handed individuals) and to the anterior surface when the trunk is its seat; the angular or linear shape of the erythematous patches and excoriations, due in the first to the running of the liquid employed to produce them, and in the latter to the use of the nails; discoloration of the skin when mineral acids are used; and, lastly, the occasional bizarre arrangement of the lesions. The application of a fixed dressing over eruptions suspected to be self-produced is frequently of great service in diagnosis, since under such a dressing an artificial eruption will promptly disappear only to as promptly reappear when it is removed.

Treatment.—With the establishment of the artificial character of the eruption the treatment becomes obvious and needs no discussion.

RADIODERMATITIS

Synonyms.—X-ray dermatitis; Röntgen ray dermatitis; X-ray burn.

Symptoms.—Exposure of the skin to the X-ray, if sufficiently prolonged, or even short exposures if frequently repeated, will produce a dermatitis, which, according to the amount of the exposure, varies from a mild erythema to necrosis, which may affect the epidermis only or involve the entire thickness of the skin. This dermatitis does not appear immediately after exposure, but only after the lapse of a period varying from five or ten days to several weeks, or in rare instances after some months. The mildest form occurs as a reddened area of variable extent resembling sunburn, usually accompanied by slight itching or a feeling of heat. After five days or a week the redness fades and a fine, usually scanty, desquamation follows for a day or two. In severe forms which follow a somewhat prolonged exposure, or a number of exposures at short intervals, the erythema is followed by vesicles and blebs which rupture and leave a superficial ulcer of varying extent, which usually heals in the course of some weeks without scarring. In the severest forms, which may follow a single prolonged exposure or many shorter exposures, blebs are produced and necrosis of the skin to a varying depth takes place. The resulting eschar is grayish and tough or dry and brown, and usually requires many weeks for its separation, leaving an ulcer which is extraordinarily slow to heal and is often extremely painful. Not infrequently such ulcers remain months or even years without healing, or even refuse to heal altogether, notwithstanding the best-directed efforts to close them. Occasionally they become carcinomatous and then pursue the usual course of carcinoma. The scars which follow these ulcers are hard, inelastic, and covered in time by great numbers of telangiectases, which increase very markedly the disfigurement.

A chronic form of dermatitis occurs with considerable frequency upon the hands of those who make skiagraphs or employ the ray with the fluoroscope for diagnostic purposes. This form is dis-

tinguished by a patchy erythema upon the backs of the hands and fingers, which after a time is followed by atrophic symptoms, such as thinning and wrinkling of the skin, which becomes dry and is covered with fine, thin, scanty scales. Pigmentation occurs either as freckle-like patches or as a diffuse brown discoloration, and small keratoses appear on various parts of the hands, beneath which ulceration may occur, occasionally leading to epithelioma. The nutrition of the nails is likewise affected—they become thin and brittle and their free edges are broken and uneven. Considerable, at times extreme, burning pain, more or less continuous, frequently accompanies the dermatitis.

At times the therapeutic employment of the ray is followed by a more or less marked atrophy—the skin is thin and wrinkled and without elasticity—even when no inflammatory reaction has been produced beyond a scarcely perceptible erythema.

The hair on parts exposed to the X-ray, even for a comparatively short time, falls; and if the exposure is repeated a number of times, or has been sufficiently prolonged, the loss of hair is permanent.

A dermatitis resembling that produced by the X-ray, but much less pronounced, may be caused by radium emanations. The mild form occurs as erythema with scanty, fine desquamation. When the exposure has been prolonged or frequently repeated there is atrophy of the skin, occasionally accompanied by blunting of sensation or paræsthesia of the ends of the fingers. Obstinate ulceration of the fingers may also occur as the result of prolonged exposure.

Pathology.—The manner in which the X-ray produces its now well-known effects upon living tissues is still altogether unknown. Scholtz, who has made an elaborate and painstaking experimental study of the effects of the ray upon the skin of rabbits, guinea-pigs, and young pigs, concludes that it affects chiefly the cell-elements of the skin, especially the epithelial cells, producing various forms and degrees of degeneration. This degeneration, after it has reached a certain degree, is followed by inflammatory reaction, as shown by dilatation of the vessels, and perivascular exudation of cells. He believes the vascular changes are probably responsible for the extension of ulceration and its slow healing.

As was first demonstrated by Darier and since confirmed by Wolbach and other investigators, the epidermis shows more or less hypertrophy occurring as a uniform thickening with local keratoses and downgrowths into the corium. The corium shows more or less pronounced degenerative changes, the most marked of which are rarefaction of the subepidermal portion and a condensation of the deeper parts. Wolbarth found a marked increase of the elastic tissue. The hair follicles, the sweat- and sebaceous glands disappear completely.

Prognosis and Treatment.—The milder forms of X-ray dermatitis usually disappear within a short time under judicious treatment, and even when superficial ulceration occurs this heals within a few weeks

without scarring. When there is considerable necrosis, the ulcers are often extremely slow to heal and may not heal at all, or only after many months or several years. As already observed, such ulcers are prone to become carcinomatous. The chronic form is usually very rebellious to treatment, and the keratoses, as already noted, may become the starting-point for epithelioma.

In mild X-ray dermatitis, calamine lotion or a saturated solution of boric acid containing oxide of zinc or subcarbonate of bismuth in suspension, one-half to one drachm to the ounce (2.0 to 4.0 to 32.0), followed later by some mild ointment, such as cold cream, will usually be all that is necessary. In superficial ulcers a one per cent. ointment of salicylic acid made up with equal parts of lead plaster and vaseline often answers well as a mildly stimulating application. Ulcers which have resisted other forms of treatment should be excised, and the defect closed by the transplantation of sound skin.

ECTHYMA

Synonyms.—Ger., Ekthyma, Eiterblase.

Definition.—An inflammatory affection of the skin distinguished by an eruption of discrete flat pustules surrounded by an inflammatory areola, situated most frequently, but not exclusively, on the lower extremities.

Symptoms.—Although the lesions are in most instances pustules from the beginning, they may begin as vesico-pustules with cloudy contents, which become purulent after twenty-four to thirty-six hours. They vary in size from that of a pea to a dime, or larger, usually increase somewhat in diameter after their appearance, and are surrounded by a well-marked inflammatory halo extending some distance beyond the border. They reach their acme after five to six days, when their contents dry up, forming brown crusts, beneath which is ulceration, usually very superficial, but in exceptional cases extending down to or involving the upper portion of the corium. At the end of ten days to two weeks the crust falls, leaving a slightly pigmented patch for a time, or, when the ulceration has been deeper, a superficial scar. The number of pustules varies from two or three to a dozen or more, situated most frequently, without any definite arrangement, upon the lower extremities and the buttocks, but also occasionally upon the trunk and upper extremities. The course of the individual lesions varies from ten to fourteen days, but the affection may last several weeks or two or three months by the continued appearance of new lesions, the longer course occurring, as a rule, only in neglected cases. The lesions are usually quite sensitive, and there is some burning and pain, but the subjective symptoms are seldom severe.

Etiology.—The disease is much more frequent in adults than in children, and is seen as a rule in uncleanly and debilitated subjects, in the ill-nourished, and in chronic alcoholics. In such subjects it is very frequently an accompaniment of some itching disease, such as

pediculosis corporis or scabies, infection taking place in the abrasions produced by scratching, as the lesions are auto-inoculable.

Pathology.—Ecthyma is a local infection situated frequently about a hair follicle. As already noted, the pustules are auto-inoculable, and contain both staphylococci and streptococci, the latter being regarded by most authorities as identical with the organism found in impetigo. According to Leloir, the epithelial cells of the epidermis undergo a reticular degeneration, "*alteration cavitaire*," which leads to the formation of cavities containing fibrin and pus. Beneath the pustules in the papillary layer of the corium there is an abundant infiltration of leucocytes. According to Unna, the pustule of ecthyma differs from that of impetigo in that a characteristic inflammation of the epidermis, which is entirely fibrinous in the centre of the lesion and markedly œdematous at the periphery, precedes the suppuration. The pus is situated, not beneath the corneous layer, but beneath the epidermis.

Diagnosis.—Ecthyma is to be distinguished chiefly from impetigo and from the pustular syphiloderm. From the former it differs by the larger size, deeper seat, and more inflammatory character of the lesions, and by their situation upon the lower extremities rather than upon exposed parts. From the latter it is to be differentiated by the acutely inflammatory course of the pustules and their limited number, by the comparatively slight infiltration of their bases, by the absence of deep ulceration, by their thinner crusts, and by the absence of other symptoms of syphilis.

Treatment.—Cleanliness, good food, and the application of a two to four per cent. ointment of ammoniated mercury will usually promptly bring about a cure. Before applying any local remedy the crusts should be removed by the liberal application for a few hours of carbolated vaseline, or, when they are adherent, by starch poultices made with a saturated solution of boric acid. When the affection is associated with pediculosis or scabies, these, of course, should have appropriate treatment.

FURUNCULUS

Synonyms.—Furuncle; Boil; Fr., Furoncle; Ger., Furunkel, Blutschwär.

Definition.—An acute circumscribed inflammation of the skin terminating in suppuration and necrosis of the central portion of the lesion.

Symptoms.—A furuncle begins either as a small pustule, frequently with a hair in the centre, or as a small, firm, painful intradermic nodule. The skin around the pustule or over the nodule becomes red, swollen, and painful, the pain being of a throbbing, burning character, and in the course of some days, from three to five usually, a pea- to nut-sized rounded tumor-like elevation is formed, in the centre of which a small opening appears, through softening of the skin giving exit to pus and blood and a little later to a soft tenacious mass of necrotic tissue, the so-called "core." The cavity left after the escape of the

"core" soon closes by granulation, and a scar varying in size according to the depth and extent of the necrosis is left which is usually permanent. The inflammation does not, however, always go on to suppuration and necrosis, but may stop short of this, forming a small, painful nodule in the skin, which is absorbed in the course of a little time, leaving no trace, the so-called "blind boil." The number of lesions varies from a single one to three or four, or occasionally scores. When there are many they often appear in irregular crops without any special arrangement, either confined to special regions or with a more or less general distribution, a condition to which the term furunculosis is applied. In the hot months of summer it is not unusual to see in ill-nourished and ill-cared-for infants living in the poor quarters of large cities, scores of furuncles situated upon the scalp, face, and trunk, which continue to appear until the advent of cool weather; this is the affection described by Colcott Fox as "multiple abscesses of infants."

The regions most frequently affected are the nape of the neck, the axillæ, the gluteal region, and the extremities, although no region is immune. The symptoms and course of furuncles are influenced to some degree by their location. When situated upon the upper lip they are frequently accompanied by an unusual amount of pain and swelling and pronounced constitutional disturbance, and they may be followed by phlebitis, thrombosis, and a fatal meningitis. In the auditory canal they give rise to great pain. About the anus they are often of considerable size and are apt to be followed by fistula.

Etiology.—A furuncle is the direct result of the invasion of the skin, in most cases at the site of a follicle, by a pyogenic organism, most frequently the *Staphylococcus pyogenes aureus*. Predisposing causes are debility from previous disease, lack of proper or sufficient food, alcoholic excess, general infections, such as typhoid fever and variola, and diabetes mellitus, which makes the skin a favorable soil for the growth of microörganisms. It occurs frequently in itching diseases, such as pediculosis corporis, scabies, and eczema, the infection taking place in scratches. New lesions frequently arise in the neighborhood of old ones by auto-inoculation, an extremely important point to remember in connection with treatment.

Pathology.—The furuncle is the product of an inflammation which results in a limited necrosis, the inflammation being directly due to toxins produced by the invading organisms. The walls of the inflamed follicle and the perifollicular tissues are occupied by a dense exudate made up of mono- and polymorphonuclear leucocytes throughout which are great numbers of staphylococci. Necrosis follows, destroying the follicle, which is replaced by scar-tissue. There is some difference of opinion as to whether the infection is limited to the follicles or whether it may not also invade the sweat-glands; a considerable number of authors believe the deep-seated furuncles are situated in the latter. According to Unna, there is in most cases first an

impetigo pustule, which is followed by a perifollicular abscess of a lanugo hair, and suppuration of the follicle.

Diagnosis.—The symptoms of a boil are so well known to everyone that it seems quite unnecessary to enter into a detailed consideration of the diagnosis.

Prognosis.—In most cases recovery is prompt, although in furunculosis the affection may continue for months, or even a year or two, before recovery takes place. As has already been observed, furuncles occurring upon the face, and particularly upon the upper lip, are at times accompanied by great pain and pronounced constitutional disturbance, and in exceptional cases are followed by death.

Treatment.—When the patient suffers from debility or is ill-nourished, he should be given tonics, such as moderate doses of iron, quinine, strychnia, arsenic, and cod-liver oil, with an abundance of good food, and strict attention should always be paid to cleanliness. A great number of internal remedies have from time to time been recommended for the cure of furunculosis, but it is more than doubtful whether any of them have any real utility. Brewer's yeast has long had a reputation for the cure of boils, not only among the laity, but among the profession; Crocker and Brocq both advised its use, but it is probably no better than a host of other so-called remedies; it may be given in quantities of a tablespoonful to a wineglassful three times a day, using the fresh yeast. Calx sulphurata (calcium sulphide) at one time had considerable vogue, but it is without effect. Within the past few years the so-called vaccine treatment—the hypodermatic injection of killed cultures of the staphylococcus, preferably made from the patient's own lesions, have been employed with excellent, at times brilliant, results, although it frequently fails. It should always be tried, particularly in furunculosis, when the ordinary methods of treatment have proved ineffective.

In most cases local treatment is sufficient to bring about a cure. If seen early, the furuncle may often be aborted by thoroughly rubbing in a thirty per cent. ichthyol ointment for ten minutes and afterwards applying the ointment thickly for from ten to twelve hours. In my hands this has been a most useful treatment. It may also be aborted by injecting it with a five per cent. solution of carbolic acid, or by boring into it with a pointed stick—a wooden toothpick answers—dipped into pure carbolic acid. After the first twenty-four or forty-eight hours it is usually too late for abortive treatment. While a great number of local applications are more or less useful, nothing is more effective in relieving pain and in hastening suppuration than hot fomentations of a saturated solution of boric acid; these soon bring about softening and discharge of the contents of the boil. Incision, which is so generally recommended, is, in my opinion, quite unnecessary, unless the furuncle is large or deep-seated; in the ordinary case it in no way influences the course of the lesion and is very painful. In order to prevent the appearance of new lesions in the neighborhood

of the old ones the skin should be thoroughly disinfected for some distance around the furuncle, and in the author's experience nothing is more effective for this purpose than a two per cent. solution of salicylic acid in seventy per cent. alcohol mopped on softly two or three times a day.

CARBUNCULUS

Synonyms.—Anthrax; Anthrax simplex; Carbuncle; Fr., Carboncle; Ger., Karbunkel, Brandschwär.

Definition.—An acute inflammation of the skin and subcutaneous tissue characterized by redness and induration, with a marked tendency to peripheral extension, terminating in extensive necrosis.

Symptoms.—It begins as a small, painful subcutaneous induration over which the skin is red, the early stage resembling somewhat a furuncle, although the induration is more decided and deeper seated. The inflammation rapidly extends in all directions, the skin becomes somewhat elevated and of a deep red or purplish color, and at the end of from ten days to two weeks occupies an area varying from two or three to eight or ten inches in diameter. Over the inflamed surface scattered pustules appear with areas of softening, over which the skin, becoming thin and livid, gives way, and from the openings thus formed a purulent fluid is discharged. As these openings enlarge, a grayish pultaceous mass of necrotic connective tissue is seen beneath the skin, which gradually softens and escapes from the openings, leaving a cavity which is slowly filled up by granulation. Not uncommonly the entire skin over the necrotic mass ulcerates, and when the latter is cast off an extensive ulcer is left, which occupies weeks in healing. Exceptionally gangrene, either moist or dry, of the entire inflamed area takes place and the eschar is cast off *en masse* after a line of demarcation has formed. More or less constitutional disturbance is present in most cases, even from the beginning, which, when the inflamed area is large, may become quite pronounced, and symptoms of sepsis occasionally appear. Severe pain of a throbbing, burning character usually attends the affection, interfering much with rest and sleep. The smaller lesions run a course of two or three weeks; the larger ones may last as many months. As a rule to which there are few exceptions, there is but a single lesion, differing markedly in this respect from furuncle. The regions of election are the nape of the neck and the upper portion of the back, but any locality may be attacked.

Etiology.—Carbuncle occurs in the great majority of cases in middle-aged, elderly, or old individuals. It is decidedly uncommon in young adults and never occurs in children. It is more frequent in men than in women. Debility, alcoholism, and diabetes mellitus are predisposing causes, the last-named especially predisposing to it. The immediate cause is the invasion of the skin, usually, if not always, a follicle, by pyogenic organisms, most commonly the staphylococcus aureus. A number of authorities, however, such as Unna, think it

probable that a special organism is concerned in its production, but this still awaits demonstration.

Pathology.—Winiwarter regards the malady as an embolic affection with necrosis followed by an intense fibrinous inflammation. According to Warren, the inflammation begins in the subcutaneous tissue, spreads upwards along the *columnæ adiposæ*, forming pustules about the hair follicles, and laterally along the lymphatics and the vessels going off from the fat columns; eventually the entire corium is involved in a destructive inflammation. Exact details are still wanting concerning the histopathology of the early stages.

Diagnosis.—In its earliest stage a carbuncle may be mistaken for a furuncle, but the rapid extension of the induration and inflammation, the appearance of multiple openings over the surface, and the presence of fever soon make apparent the real character of the lesion.

Prognosis.—Carbuncle is always a serious affection, and the prognosis should always be a guarded one, especially in feeble and in old subjects, in whom a fatal termination is not uncommon, death resulting from sepsis or exhaustion. In diabetic subjects it is often of large size and attended by serious general symptoms which frequently end fatally.

Treatment.—The most effective and certain method of treatment is the excision of the entire lesion, but this is only practicable in the early stages. Injections of a three per cent. solution of carbolic acid made all around the spreading margin will frequently arrest its further progress. When necrosis has occurred a saturated solution of phenol should be injected in every direction through the openings into the slough, as advised by Wood, Taylor, Manley, and others. As soon as it is sufficiently separated the slough should be removed. Hot boric acid fomentations are often very useful in relieving pain and tension and in accelerating the separating of necrotic tissue. If pain is severe and prolonged, occasional hypodermatic injections of morphia may be necessary. The patient's general condition frequently demands careful attention. If he is the subject of diabetes, treatment appropriate to this affection should be employed. Failure of strength is to be anticipated and met by an abundance of nourishment and the administration of tonics and stimulants.

ERYSIPELAS

Synonyms.—St. Anthony's fire; Fr., Erysipèle, La rose; Ger., Rothlauf, Rose, Wundrose.

Definition.—An acute, contagious, and infectious disease characterized by a spreading dermatitis occurring as dusky-red, well-defined patches, accompanied by fever.

Symptoms.—The attack usually begins rather abruptly with chilliness or a pronounced chill, fever and headache, and a few hours later a dusky-red patch appears, usually on some portion of the face, most frequently near the nose or on the forehead near the margin of the

hair, somewhat less frequently upon the ear or in its neighborhood. This patch is somewhat swollen, shining, its borders usually well circumscribed and slightly elevated; it spreads steadily by continuity to neighboring parts until a considerable area, not infrequently the entire face, or the face and scalp, is covered. The face is then markedly swollen, the eyes frequently closed, and the ears greatly thickened. Not uncommonly the inflamed surface is covered with vesicles and blebs, and in the severest cases the deep cellular tissue may be invaded with the formation of abscesses. In rare instances gangrene of the skin occurs. The temperature is usually high, reaching 104°, 105°, or even 106° F., and in the debilitated or in alcoholics there is frequently delirium with great prostration. Often after four or five days the redness and swelling disappear in the region first attacked, although the disease may still be extending on its borders. Occasionally the inflammation extends to the mucous membranes of the mouth and throat, which become dry, red, shining, and swollen, and the larynx may be involved with pronounced œdema threatening suffocation.

Somewhat exceptionally the disease exhibits a tendency to spread widely, not only covering the face and scalp, but extending to the trunk; in such cases the malady pursues a prolonged course, lasting for several weeks (erysipelas migrans, erysipelas ambulans). In a case of this kind under the author's care the disease spread over the entire face and scalp and down the back to the lumbar region.

Etiology and Pathology.—Erysipelas is contagious to a mild degree and may be communicated by direct contact, or mediately by clothing, or by a third person. The immediate cause is a streptococcus, the *Streptococcus erysipelatis*, which was first isolated by Fehleisen. It is regarded by most recent authorities as identical with the streptococcus pyogenes. It is found abundantly in the lymph spaces at the spreading margin of the dermatitis and some distance beyond in the lymph-vessels. The presence of wounds or abrasions especially predisposes to the infection, and it is common in those who have recently undergone surgical operations and in puerperal women. It is uncertain whether infection can take place through the unbroken skin, although in facial erysipelas there is, as a rule, no discoverable breach of continuity. Individual susceptibility to the infection varies a good deal. There are some individuals who are especially prone to it. In a patient of the author's there were three attacks in four months, and a history of a number of previous attacks. Debility and alcoholism are likewise predisposing causes. Season apparently influences the incidence of the disease; Anders found it much more prevalent in the spring months, especially April, than in the other seasons of the year.

The inflammation is, according to Unna, a simple fibrinous one. The collagen of the corium undergoes softening and the elastic tissue disappears. The vessels and capillaries are dilated, and many of them contain fibrinous thrombi which occasionally completely fill them. The epithelium of the epidermis undergoes degeneration and partial

necrosis, and when the exudation of serum has been abundant the entire epidermis is lifted up from the papillary body.

It is a well-known and extremely interesting fact that an attack of erysipelas occasionally exercises a favorable influence upon other morbid conditions, such as malignant neoplasms like sarcoma, and chronic inflammatory diseases. Hallopeau and Roudet have observed the cure of erythematous lupus on the side of the face attacked by erysipelas.

Diagnosis.—Erysipelas is to be differentiated from simple dermatitis and from eczema. From both these it differs by the peculiar dusky-red color of the patches, their well-defined and somewhat elevated borders, and, above all, by the more or less pronounced constitutional disturbance which accompanies the inflammation of the skin.

Prognosis.—The prognosis is, as a rule, favorable in adults who have previously been in good health. The contrary is true in the aged, the debilitated, and especially in alcoholics. In puerperal women and in those who have undergone serious surgical operations its occurrence is always of serious import. In very young infants, in whom it may spread widely, a fatal termination is the rule.

Treatment.—The diet should consist largely of milk and eggs, and these should be given in the old and debilitated at short intervals. When stimulants are indicated, alcohol and strychnia may be given, the former in moderate quantities only. If the temperature is high, tepid baths and cold sponging may be employed to reduce it.

It is very doubtful whether any known internal remedy is capable of favorably influencing the course of the malady. The tincture of the chloride of iron has long been regarded as having especial value in the treatment of erysipelas; it should be given in doses of from fifteen to thirty minims (1.0 to 2.0) every three or four hours, along with quinine, two to three grains (0.13 to 0.20) at a dose. Injections of antistreptococcic serum and of autogenous vaccines have occasionally given good results. Attempts have been made to limit the spread of the disease by injecting solutions of carbolic acid, two per cent., and of bichloride or mercury, 1:4000, about the borders of the patches with occasional success. With the same end in view, the borders of the patch and some distance beyond may be painted with tincture of iodine. Ichthyol is one of the most useful local remedies, and may be used as a twenty-five per cent. ointment, which should be applied two or three times a day, or as an aqueous solution, twenty-five per cent., painted on with a camel's-hair brush; the author much prefers the latter as more agreeable and more effective.

ERYSIPELOID

Synonyms.—Erythema serpens (Morrant Baker); Erythema migrans.

Definition.—A spreading, patchy erythema of the hands resembling superficially erysipelas.

Symptoms.—This affection was given the name erysipeloid by Rosenbach because of its resemblance to erysipelas, but it was first described by Morrant Baker as erythema serpens. It is distinguished by pinkish or violaceous patches, with well-circumscribed margins, which begin about a slight abrasion or puncture in the skin and spread eccentrically. As they extend at the borders they undergo involution at the point of origin, and in this manner may assume an annular shape, or, when two or more neighboring patches coalesce, present a serpiginous arrangement. There may be but a single patch, or there may be several, and they are situated almost exclusively upon the hands. Elliot, however, observed an instance in which the toes were also affected. Some degree of itching and burning is usually present, which may be quite severe, and in some cases there is considerable pain.

Etiology and Pathology.—The disease occurs chiefly in butchers, fish-dealers, cooks, and others who are apt to handle decomposing animal matter. Rosenbach attributed it to a microörganism, a *cladothrix*, with cultures of which he claimed to have reproduced it. Gilchrist, in a large number of cases resulting from crab-bites or lesions produced by crabs, most carefully studied, was unable to find any organism, and all his culture and inoculation experiments resulted negatively; he thinks it probably due to a special ferment. In sections he found the histological changes characteristic of acute inflammation; there were numerous polynuclear leucocytes and lymphoid cells in all parts of the corium, the latter chiefly about the vessels.

Diagnosis.—The affection is to be distinguished from erysipelas by its almost exclusive localization upon the hands, and the absence of fever. The spreading patches, when they assume an annular shape, may resemble the annular patches of erythema multiforme, erythema annulare, but the latter are usually accompanied by other lesions, such as papules, and are symmetrically distributed on the backs of both hands.

Prognosis and Treatment.—The disease is a self-limited one, disappearing spontaneously after two or three weeks. Its course may be shortened materially by appropriate local treatment. A twenty-five per cent. ointment of ichthyol or an aqueous solution of the same strength, applied two or three times a day, is one of the most useful applications. Gilchrist found a twenty-five per cent. plaster of salicylic acid the most effective remedy in his large series of cases.

GRANULOMA PYOGENICUM

Synonyms.—Botryomycosis; Granuloma telangiectodes; Granuloma pediculatum; Fr., Botryomycose humaine (Poncet and Dor); Pseudobotryomycose.

Definition.—A benign growth composed of granulation-tissue.

Symptoms.—This small neoplasm was first described by Poncet and Dor, in 1897, who, believing it to be due to an infection by the

botryomyces, an organism described by Bollinger, gave it the name human botryomycosis. Although not a common affection, a considerable number of cases are already on record, reported by Chambon, Sabrazés and Laubie, Reverdin and Julliard, Brault, and a few others in France, by Faber and Siethoff in Holland, by the author and Wile in America, and by Kutnoff and Heuk in Germany. The last-named has published a most exhaustive account of it, with abstracts of all the cases reported to date. It occurs as a pea- to a hazel-nut-sized, smooth, red, round or hemispherical tumor, usually attached by a pedicle, but sometimes sessile, projecting through an opening in the horny layer of the epidermis, which surrounds it like a collar. It is usually situated upon the extremities, oftenest upon the hands (Fig. 64), occasionally upon the feet, much less frequently upon the cheeks or the lip. Although rarely the seat of spontaneous pain, it is usually quite sensitive and sometimes extremely so. It is extremely vascular and frequently bleeds profusely upon the slightest injury. When removed it frequently recurs again and again, unless the base has been very thoroughly destroyed. In many instances a slight injury, such as a small puncture with a needle or other pointed instrument, or a slight abrasion, has preceded the appearance of the tumor.

Fig. 64.—Granuloma pyogenicum, thumb.

Etiology and Pathology.—In all probability traumatism always precedes the growth, although this is not demonstrable. As already observed, Poncet and Dor at first believed it to be the result of an infection with the *botryomyces*, a fungus discovered by Bollinger in tumors of the scrotum and spermatic cord of the horse following castration. The only organism present is the staphylococcus.

The growth is composed chiefly of young connective-tissue cells and numerous blood-vessels, frequently greatly dilated and filled with blood, giving the sections the appearance of an angioma in places. About some of the vessels there are small collections of lymphocytes and a few "mastzellen." About the periphery there is a moderate number of polymorphonuclear leucocytes and an abundance of staphylococci. Heuk would divide the growth into two varieties: granuloma pediculatum simplex, resembling for the most part granulation tissue, and granuloma pediculatum angiomatosum, distinguished by a tendency to the formation of large blood-spaces, and collections of spindle cells (Fig. 65).

Diagnosis.—Their situation, in most cases somewhere upon the hand, as a rule following a slight injury, their great vascularity and sensitiveness are characteristic features.

Prognosis and Treatment.—Thorough removal is followed by complete cure, but recurrences are frequent unless the destruction of the little tumor has been complete.

It may be removed by the curette, first freezing it with ethylchloride spray; the curetting should be followed by the application of a thirty per cent. ointment of pyrogallol to the wound for four or five

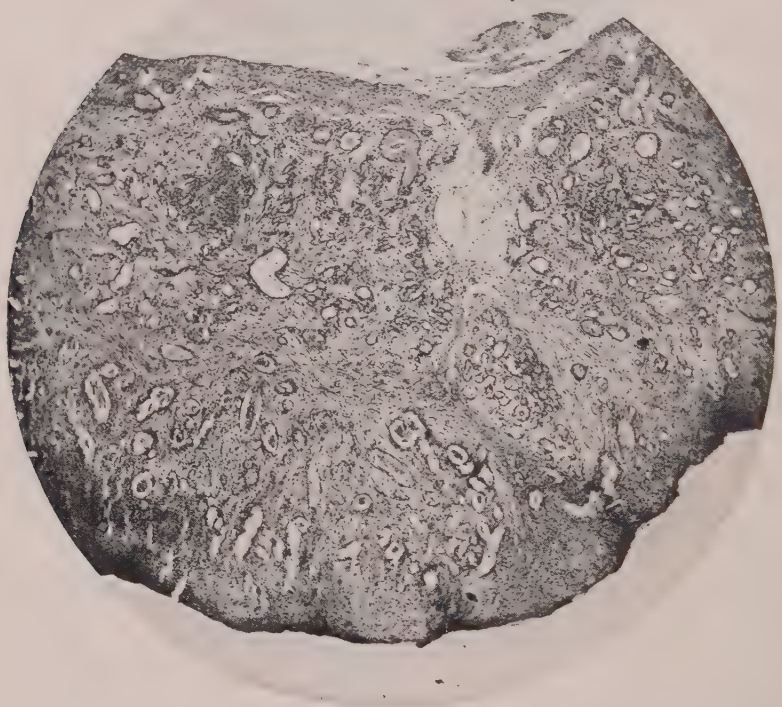


FIG. 65.—Granuloma pyogenicum. Very vascular granulation tissue. Note numerous large dilated vessels.

days to insure thorough destruction of the base of the tumor. After trying a number of methods the author has found this the most effective in preventing recurrences.

INFECTIOUS GRANULOMATA

LUPUS VULGARIS

Synonyms.—Lupus exedens; Lupus vorax; Fr., Lupus vulgaire; Lupus tuberculeux; Ger., Fressende Flechte (Plate XV).

Definition.—An infectious granuloma due to the invasion of the skin by the bacillus tuberculosis, characterized by discrete brownish-red nodules and patches of nodules followed by ulceration and scarring.

Lupus vulgaris is the commonest and best-known of all the forms of tuberculosis of the skin. While it is an infrequent affection in the United States, comprising less than one-half of one per cent. of all

PLATE XV

Lupus vulgaris (elbow).

cutaneous affections, according to the statistics of the American Dermatological Association, embracing several hundred thousand cases, it is common in many countries of Europe, such as Austria, France, Russia, and the Scandinavian peninsula. In Great Britain, although decidedly less frequent than on the Continent, it comprises, according to Crocker, about two per cent. of all skin diseases.

Symptoms.—It usually begins with one or more discrete, pin-head-sized, brownish-red nodules deeply imbedded in the skin, projecting little, or not at all, above the surface for some time after their appearance. If the skin is stretched, or if the nodules are examined under glass-pressure, they grow paler, assuming a dull yellowish hue, but do not disappear. New nodules appear from time to time in the neighborhood of the old ones, which slowly enlarge, so that in the course of some months or years patches of variable size and shape are formed (Fig. 66). The course of the lesions is variable. They may remain deeply imbedded in the skin, scarcely appreciable by the touch (lupus planus, or lupus maculosus of older writers), undergoing very little

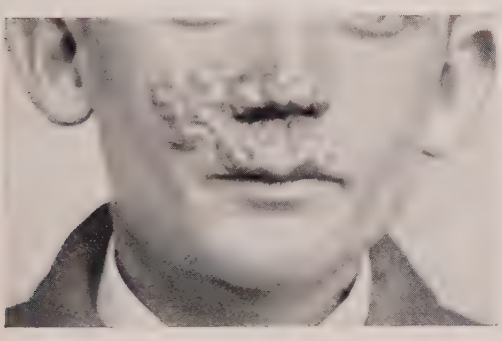


FIG. 66.—Lupus vulgaris.

FIG. 67.—Lupus vulgaris.

change for a period lasting months and even years. Leloir saw a case of this kind which had undergone little or no change in twelve years. Eventually they are absorbed, leaving a thin, parchment-like scar, which exfoliates moderately (lupus exfoliativus). This form, which represents the mildest type of the disease, is rather infrequent. Much more commonly the nodules grow until they reach the size of a small pea; they are then distinctly elevated and exhibit a peculiar semitranslucency which has been compared to apple-jelly. They may either undergo absorption after a variable period, or ulcerate, producing irregularly shaped, rather shallow ulcers, with thin edges, which discharge a purulent fluid which dries into yellow or greenish crusts (lupus exedens). Although the ulceration usually progresses slowly, it may eventually involve large areas, producing uneven, contractile scars which frequently resemble those which follow burns, and which when situated about the smaller points, as the fingers, or other movable part, such as the lower jaw, may interfere more or less with motion. A somewhat characteristic feature of the scars of

lupus is the reappearance of nodules from time to time in the cicatricial tissue which was apparently free from active disease. Although the patches are often irregular in outline, without any definite arrangement of the nodules, they occasionally assume an annular shape (Fig. 67), nodules, ulcers, and crusts surrounding a central area of scar-tissue. Through the extension of such annular patches and the coalescence of their borders, seripiginous figures are sometimes formed, an arrangement which is seen most frequently upon the extremities (Fig. 68), less commonly upon the trunk. In many cases there is but a single patch, situated more frequently in the face (Figs. 69 and 70) than elsewhere, but there may be several, and exceptionally there may be many scattered over the face, extremities, and trunk (lupus disseminatus). Some portion of the face, usually the cheek, is the part most frequently attacked; the nose is also a common site. In the last-named region the disease usually begins upon one or both alæ, extending thence to other portions of the organ, or it may begin at the edge of the nostril, invading the mucous membrane as well as the skin. In the course of months or a year or two all the soft parts are invaded as well as the cartilage, and eventually destroyed, the nose being transformed into a pointed, beak-like prominence covered with thin scar-tissue, the nostrils more or less narrowed, or, in exceptional cases, completely occluded.

Fig. 68.—Lupus vulgaris, thigh.

Lupus frequently occurs upon the external ear, beginning as a rule upon the lobe, which is more or less thickened, brownish-red or violaceous in color, translucent and gelatinous in appearance, and often slightly scaly. The disease slowly spreads to other parts of the ear, absorption or ulceration takes place in time, and finally nothing is left but the cartilage covered with thin, shrunken scar-tissue.

Although the above-mentioned regions are those in which the malady is most frequently met with, no portion of the cutaneous sur-

face is exempt. Next to the face in order of frequency are the extremities (Fig. 71), which are attacked oftener than the trunk, which is invaded, as a rule, only in those cases in which the disease is widespread. The scalp and genitalia are rarely attacked.

More or less marked departures from the usual type and course occur with considerable frequency. In certain cases there is solid œdema, with hyperplasia of the fibrous tissue of the corium as the result of blocking up of the lymph-channels by infiltration of lupus tissue, or from repeated attacks of lymphangitis (lupus hypertrophicus) (Fig. 72). When this occurs upon the lower extremities it is frequently accompanied by extensive papillary hypertrophy, producing a condition resembling elephantiasis.

Some years ago Leloir called attention to a peculiar and unusual variety in which, instead of tubercles, there is a uniform, dusky-red

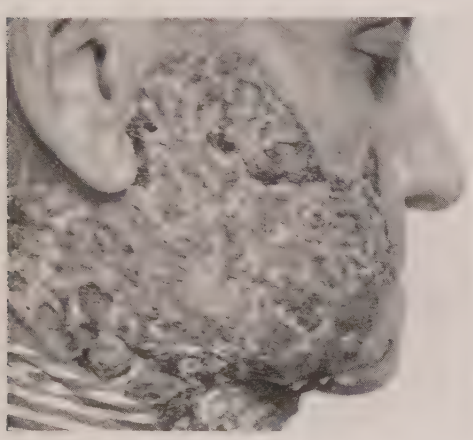


FIG. 69.—Lupus vulgaris. Much crusting.

FIG. 70.—Lupus vulgaris.

infiltration of the skin, forming patches with slightly elevated borders, and after a time a slightly depressed centre, the surface often desquamating moderately. On account of its resemblance to lupus erythematosus, especially when it occurs in the face, where it may show a symmetrical bilateral arrangement, he gave this variety the name lupus vulgaris erythematodes (lupus vulgaire erythematöide). Although no decided nodules are present, if the skin is examined when stretched or under glass-pressure miliary nodules may be seen at the borders of the patch. The progress of this form is extremely slow. Ulceration never occurs, but the patches may be absorbed, leaving depressed cicatrices.

The lupus sclerosus of this author is, as he stated, only a form of the tuberculosis verrucosa cutis of Riehl and Paltauf.

Whatever form it may assume, the course of the disease is slow and irregular, marked by periods of inactivity followed by exacerbations. New lesions are added to the borders of the patches, which

are thus slowly enlarged, and new foci spring up occasionally at points more or less remote from the original one, which serve as the nuclei for new patches. As the disease slowly extends, variously-sized

FIG. 71.—Lupus vulgaris, forearm.

FIG. 72.—Lupus hypertrophicus.

areas of scar-tissue are formed, either through the absorption of the lupus infiltrate or the ulceration of the nodules, the scars which follow absorption being, as a rule, smooth and parchment-like, while those

which result from ulceration are irregular and uneven, like those resulting from a burn. Upon the face the amount of disfigurement which follows in long-standing and extensive cases is extreme. Lips, eyelids, nose, ears may all be replaced by cicatrices, changing the face into a hideous mask. Pain is rarely a prominent symptom.

Lupus does not limit its ravages to the skin, but attacks the mucous membranes of the nose, lips, pharnyx and larnyx. The nasal mucous membrane is attacked very frequently, in from twenty to thirty per cent. of all cases, the disease usually extending to this region from the skin, although it may begin here. In the mouth it is found on the inner surface of the lips and on the gums, where it produces infiltration and ulceration with papillomatous growths. On the hard and soft palate it produces ulceration and often considerable distortion of the soft parts by the contraction of the resulting cicatrices. The mucous membrane of the larnyx is much less frequently invaded than the other mucous membranes; in this region it produces ulceration with hoarseness or even complete loss of voice, and occasionally more or less dyspnœa. The conjunctival mucous membrane may be attacked, although infrequently, the disease usually extending to this region from the lachrymal duct, from the lids or from the cheek; in rare instances it is primary.

Complications and Sequelæ.—Pulmonary tuberculosis is a frequent complication of lupus. According to Leloir, it occurs in thirty per cent. of all cases, and other observers give an even higher percentage. Tubercular meningitis and miliary tuberculosis also occur, although infrequently. Inflammation of the lymphatics and of the lymphatic glands frequently occurs, the latter not uncommonly suppurating. A serious, although happily an infrequent, sequel is epithelioma, which usually develops in a scar and occurs more frequently in the face than elsewhere.

Etiology.—Lupus vulgaris begins in the great majority of cases in childhood and early youth, but is rare before three years of age and appears infrequently after puberty. Exceptions occur, however; Colcott Fox saw five cases in which it began in the first year of life, and the author has seen it as early as the second year. Very exceptionally it begins quite late; the author has under his observation at present a woman with an extensive lupus of the face in whom it began at 62 years of age. It is decidedly more frequent in women than in men, according to Crocker's experience in the proportion of four of the former to one of the latter. Although its subjects often appear in good general health, a very considerable proportion show signs of active or past tuberculosis, especially of the glands and bones; Fox found more than 30 per cent. of 96 cases suffered from glandular disease. In a very large proportion of instances there is a history of tuberculosis in other members of the patient's family (Fox, Crocker, Bender and others).

It is an occasional sequel of the eruptive fevers, more especially of measles, a considerable number of instances being recorded in which a more or less widely disseminated lupus followed shortly after an attack of that disease.

The direct cause is the bacillus tuberculosis. It may arise from direct inoculation of this organism into the skin, or it may follow tuberculosis of the deeper tissues as a secondary affection. Examples of direct inoculation have been reported by numerous observers; it has been noted to follow piercing of the ears, vaccination, contact of an abrasion with tuberculous sputum, tattooing, the needle having been

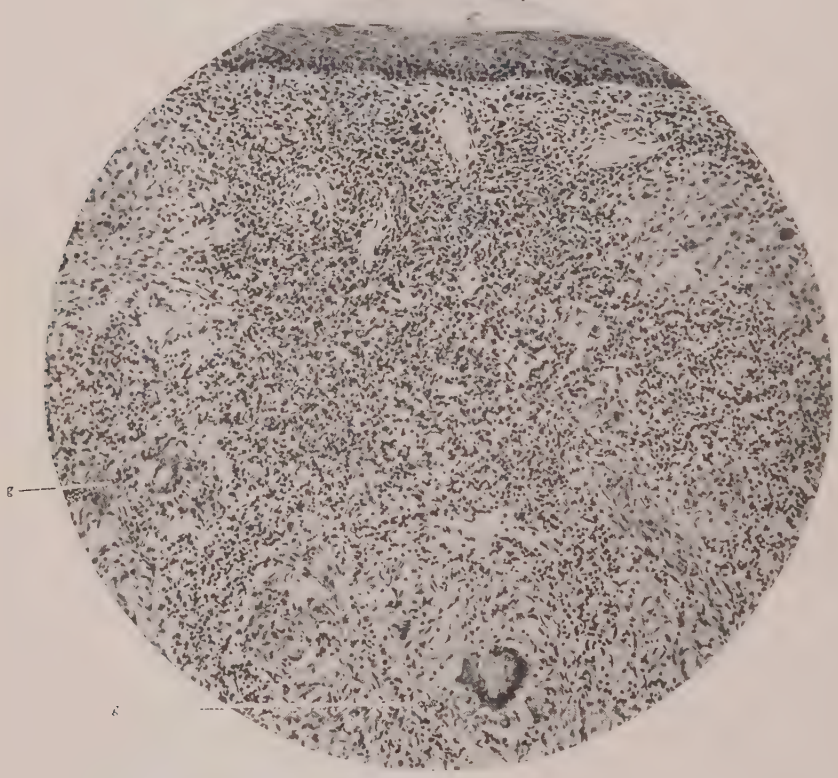


FIG. 73.—Lupus vulgaris, abundant exudation of lymphoid cells with here and there a giant-cell, *g*.

moistened with the saliva of the operator, who was the subject of pulmonary tuberculosis (Jadassohn). As a secondary affection, it frequently begins at the external opening of a sinus connected with a tuberculous gland or carious bone; the case of the elderly woman above referred to was an example of this mode of origin, the disease having begun about a sinus connected with a suppurating tuberculous gland at the angle of the jaw. Much less frequently the bacillus

reaches the skin by way of the lymphatic and blood channels from some primary visceral focus; and in such cases the patches are usually much more numerous and more widely disseminated than in the cases which arise by direct inoculation.

Pathology.—Lupus is an infectious granuloma of tuberculous nature, and may be taken as the type of cutaneous tuberculosis. While its histopathology corresponds in its principal features with the histopathology of tuberculosis of other tissues, it varies considerably in its details. In recent nodules the subpapillary portions of the corium, much less frequently the papillæ, are occupied by round, oval, or irregularly-shaped, usually quite well-circumscribed, collections of cells, situated about or in the neighborhood of a vessel, and imbedded in a delicate fibrous mesh-work. The cells are usually of three kinds—epithelioid cells, small, round, or lymphoid cells, and in much smaller numbers large multinucleated giant-cells of the Langhans type (Fig. 73). Not uncommonly there are few or no epithelioid cells, all being of the lymphoid variety with scattered giant-cells, the so-called lymphoid tubercle (Fig. 73). According to Unna, the epithelioid cells are plasma cells, and the small round cells are derivatives of these, "daughter" plasma cells. He finds that in the very earliest stage of the lupus tubercle it is composed entirely of plasma cells. In a considerable proportion of cases, instead of being collected in circumscribed areas, the cells are more or less uniformly distributed throughout the corium, or they are arranged in irregular branching and anastomosing tracts, following the blood-vessels and the lymphatic spaces. In many cases the cellular infiltrate is composed of numerous quite round areas of cells, surrounded by an ill-defined, narrow, fibrous capsule, giving it a figured appearance. In the older nodules the centre of the tubercle is occupied by a faintly-staining granular area in which formed elements are no longer visible, the cells, together with the collagenous and elastic fibres, having more or less completely disappeared. The vessels are entirely obliterated, either as the result of pressure or from blocking up of their lumen by swollen endothelium. Caseation, such as occurs so commonly in other forms of tuberculosis, does not occur in lupus, and the three-zone arrangement of a caseating centre surrounded by epithelioid cells and an outer zone of small round cells is practically never seen. The further course pursued by the lupus infiltrate varies considerably. The degenerated areas may be slowly absorbed and replaced by fibrous connective tissue with the formation of a cicatrix, or the epidermis, thinned by pressure from below by the growing tubercle, eventually gives way and ulceration follows. In certain cases there is a marked hyperplasia of the connective-tissue cells, and the cellular lupus tissue is largely replaced by fibrous tissue, producing, on the lower extremities particularly, an elephantiasic condition, as in lupus hypertrophicus. While tubercle bacilli are always present, they are often demonstrated with difficulty, owing to their scanty numbers, it frequently being necessary

to examine many sections before finding a single example. They are usually found in the giant-cells, but may be found lying free outside of these.

Various secondary changes, often of a marked character, occur in the epidermis. It is commonly increased in width, the increase being due chiefly to a hyperplasia of the rete, and in a considerable proportion of cases, particularly in those in which the lupus infiltrate occupies the papillæ, there is a marked increase in the length of the interpapillary processes of the rete, which may extend down into the corium as branching and anastomosing tracts resembling those seen in epithelioma. There is usually more or less parakeratosis resulting in desquamation, which at times is quite abundant, as in lupus exfoliativus.

Diagnosis.—The disease with which lupus is most likely to be confounded is syphilis, particularly the tubercular or nodular lesions of the tertiary period. While as a rule these two affections are readily distinguished from each other, there are cases in which the distinction is made with considerable difficulty. The nodules of lupus are usually less elevated and more deeply imbedded in the skin than those of syphilis, particularly in the early stages, and more yellowish and translucent. There is usually but a single patch of lupus, while there are frequently two or more of syphilis; the former are, as a rule, without any definite arrangement, while the patches of syphilis are frequently annular or crescentic in shape. The progress of a patch of lupus is ordinarily quite slow, months or even years elapsing before it reaches any considerable size, while the syphilitic patch grows comparatively rapidly and ulcerates early, the ulcers being much deeper than those of lupus and often exhibiting a punched-out appearance and a circular or crescentic shape. The scars produced by the two affections are usually quite characteristic; the scar of lupus is often rough, uneven, and irregular in outline, and frequently shows nodules in the centre, while the scars of syphilis are smooth, round, soft, and pliable, and never contain nodules except at the border, a feature of decided value in diagnosis. The age incidence of the two diseases is also markedly different. Lupus begins almost invariably in childhood, while syphilis is in most instances an affection of adult life. In doubtful cases injections of small doses of tuberculin may be tried, always keeping in mind that not only severe local, but general, symptoms may follow in tuberculous subjects.

Lupus is sometimes mistaken for epithelioma, but the yellowish-red nodules of the former are quite unlike the pinkish nodules of the latter; lupus occurs in patches, while epithelioma is usually found as a single lesion. The ulcers of lupus are shallow, with thin edges, and extend very slowly; those of epithelioma are frequently quite deep, grow rapidly, and have an infiltrated, bead-like border. Lupus is a disease of early life, epithelioma is seldom seen before middle age, usually after fifty years.

The lupus vulgaris erythematodes of Leloir, when situated upon the face and bilaterally distributed, may resemble lupus erythematosus quite closely, but when examined carefully, especially with the aid of glass-pressure, miliary nodules will be found about the borders of the patch, which are never present in the latter affection.

Quite exceptionally in extensive lupus of the face there may be so much infiltration as to produce a condition resembling the leonine facies of lepra, and the serpiginous patches occasionally seen upon the extremities may be mistaken for that malady, but the presence of the soft, yellowish-red, semitranslucent nodules, and especially the absence of anæsthesia, are features which readily differentiate it from leprosy.

Occasionally, when there is considerable scaling of the lupus patches (lupus exfoliativus), they may be mistaken for psoriasis, but the scaling never presents the mica-like appearance nor the laminated arrangement so characteristic of the latter disease.

A thickened patch of inveterate scaly eczema may at times bear some resemblance to a patch of lupus, but the much greater scaling, the itching often severe, the absence of characteristic nodules, and a history of occasional oozing are symptoms so characteristic of eczema that the two diseases are not likely to be mistaken for each other.

Treatment.—Individuals suffering from lupus, like all other tuberculous subjects, should live as much as possible in the open air. Fresh air and sunlight are most valuable aids to any method of treatment, and much more useful and effective than drugs. They should have an abundance of easily digested, readily assimilable food, plenty of milk, cream, fresh eggs, with butter and other foods of a similar character. Everything should be done to increase their nutrition, so that their powers of resistance to infection may be brought to the highest possible point. Although not directly influencing the disease, cod-liver oil, iron, arsenic, and quinine are of use in helping to improve the general condition.

Thyroid gland given internally, as first proposed by Bramwell, was thought by Crocker to directly act upon the lupus tissue, and was regarded by him as a most important aid to the local treatment; Pringle found it remarkably effective in cases of the so-called florid type.

Beginning with five grains (0.30) a day, the quantity should be slowly increased until fifteen grains (1.0) a day are being taken, the patient being carefully watched for symptoms of thyroidism; should these appear, the drug should be suspended or the dose diminished. It should be continued for some time, several months to a year.

After the complete failure to realize the extravagant hopes which were at first entertained concerning the curative powers of tuberculin, it was completely abandoned for a time as a useless and frequently dangerous agent, but in late years it has been taken up again, and evidence is accumulating that while not a specific, as at first thought,

it has a certain measure of usefulness when used with care and discrimination. In beginning treatment with this very powerful agent, the dose should be small, the aim being to produce effective local reaction with the minimum amount of constitutional disturbance. The initial dose should rarely be larger than 0.02 mg. of the new tuberculin (tuberculin TR), and an even smaller quantity, 0.002 mg., may be advisable in many cases; a second injection should not be given until the reaction produced by the first one has entirely subsided. Ordinarily the interval between the doses should be from eight to ten days, and the size of the dose should be slowly and cautiously increased. The treatment may be controlled by the opsonic index, as advised by Wright, but if due care is exercised this is not necessary.

Local Treatment.—However useful general treatment may be, it must be regarded only as an adjuvant, an important adjuvant, it is true, to the local treatment. Since we possess no remedy which, when applied to the lupus tissue, will destroy the tubercle bacillus without at the same time injuring the skin in which it is imbedded, the aim of all local treatment is to remove the disease or to destroy it *in situ*.

The various forms of local treatment may be considered under three divisions: First, the mechanical removal or destruction of the disease by surgical procedures, such as excision, erasion, or scarification; second, its destruction *in situ* by various chemical caustics, and the thermo-cautery or the galvano-cautery; third, its exposure to various forms of radiant energy, such as light, the X-ray, and radium, or phototherapy and radiotherapy.

When the patches are of moderate size and favorably situated, they may be excised—a method elaborated and largely employed by Lang. In practicing excision, a liberal margin of sound skin down to the subcutaneous fat should be included in order to insure the removal of all infected tissue, and the utmost care should be taken to avoid infection of the operation wound by the instruments or sutures employed. When the operation wound is small, it may be closed by sutures in the ordinary way, but if considerable tissue has been removed Thiersch grafts should be applied or a plastic operation done, replacing the diseased tissue by a flap of sound skin. Notwithstanding every precaution, recurrences occasionally take place in the operation scar.

The disease may be removed by the curette, but curettement alone is not sufficient to remove all of the lupus tissue; it should always be followed by the application of some caustic, such as caustic potash, either as a fifty per cent. solution or the solid stick, or pyrogallol applied as a plaster.

Thorough and repeated scarifications with a fine knife, such as a tenotome, or the many-bladed knife devised for the purpose, first introduced by Balmano Squire and afterwards advocated by Vidal, is capable of producing excellent results, especially from a cosmetic point of view. The patch should be thoroughly cross-hatched, and

when the bleeding has been checked it should be dressed with a 1:1000 bichloride of mercury solution, or painted with tincture of iodine.

Formerly the actual cautery was employed a good deal, but at the present time its use is limited to the galvanocautery in the treatment of lesions of the mucous membranes.

Many and various chemical caustics have at one time or another been employed in the treatment of lupus. Arsenic, caustic potash, nitrate of silver, chloride of zinc, pyrogallol, chromic acid, lactic acid, trichloracetic acid, and many others have been used at one time or another for the destruction of the lupus tissue. Of all these, arsenic and pyrogallol, which exercise a more or less selective action upon the diseased tissue, are the most useful.

Arsenic may be used in the form of Cosme's paste, as modified by Hebra, the formula for which is as follows:

℞

Acid. arseniosi ..... gr. xx (1.30)
Cinnabaris ..... ʒi (4.0)
Ungt. aq. rosæ ..... ℥i (32.0)

M.

This should be thickly spread upon lint, applied to the diseased area, covered with a layer of absorbent cotton, and fixed in place by a roller bandage. The dressing should be renewed once every twenty-four hours, cleansing the surface with a saturated boric acid solution or other mild antiseptic solution at each dressing. After three or four days the arsenic paste is discontinued and a wet dressing of boric acid solution is applied continuously until all necrotic tissue has come away and a clean granulating surface is left; a two per cent. salicylic acid ointment may then be applied until healing is complete. To avoid possible poisoning from absorption, this paste should not be applied to a surface more than three inches (75 mm.) square. The chief objection to arsenic as a caustic is the severe pain which it produces.

Pyrogallol, which the author much prefers to any other caustic, may be used as a stiff twenty-five to thirty per cent. ointment or plaster. A formula which the author has employed with much satisfaction is as follows:

℞

Pyrogallol ..... ʒiiss (10.0)
Cerat. resinæ ..... ℥ss (16.0)
Bals. Peruvian ..... q.s.

M.

This should be spread thickly upon lint, or, better, upon kid, laid upon the patch to be destroyed, covered with a layer of absorbent cotton, and kept in place by a bandage. The plaster should be renewed twice a day and continued for five to six days. It acts much more rapidly if before applying it the surface to which it is to be applied is first lightly rubbed over with a stick of caustic potash or painted with a 50 per cent. solution, and after a few minutes neutralized with dilute acetic acid. The pain which accompanies the use of pyrogallol is seldom severe and often trifling.

The solid carbon dioxide introduced by Pusey into dermatological therapeutics has not proved a satisfactory remedy in the author's hands; its effects do not extend deeply enough, and it is therefore only applicable, if applicable at all, to the most superficial cases.

Cauterization by means of a stream of hot air directed against the patch, as advocated by Hollander, possesses no advantages and some disadvantages over chemical caustics.

The introduction of the light treatment, phototherapy, by Finsen marked a great advance in the treatment of lupus, and this and the X-ray have pushed all other methods of treatment very much into the background.

The Finsen treatment consists essentially in the exposure of the diseased area to the concentrated rays of light. In the original apparatus sunlight was employed, but in the more recent apparatus the electric arc lamp is used as the source of light, the rays from which are concentrated by a suitable arrangement of quartz lenses, quartz being employed since glass prevents the passage of the actinic rays. Many modifications of the original apparatus of Finsen have been made by Reyn, Lortet, and Genoud, which have increased the practicability of the treatment.

The part to be treated is made as anæmic as possible and kept so during the exposure by pressure with a quartz compressor, since the blood shuts off the chemical rays of light. Each exposure lasts from one-half hour to two hours, the length of time depending upon the amount of infiltration present. Some hours, usually from twenty to thirty-six, after the exposure the skin becomes reddened and a crop of vesicles and blebs appears, which disappear in the course of from eight to ten days. A second exposure is not given until the reaction caused by the previous one has completely subsided. The treatment is continued in this manner until the nodules have completely disappeared. Patients should return at intervals of a month or two for examination, so that recurrences may be attacked at once. When ulcers are present these must be healed by suitable treatment before employing the light, since it is not applicable to ulcerated surfaces.

The X-ray, which was first employed by Schiff in the treatment of lupus, frequently gives results little, if at all inferior, to those obtained by phototherapy, and usually requires much less time than the latter to produce the same effect, since the sittings are from ten to fifteen minutes and a much larger surface can be treated at a sitting. There are two methods of conducting X-ray treatment. In the first, moderate doses (three or four H.) are given, each exposure lasting ten to fifteen minutes, with the anode at a distance of five or six inches (125 or 150 mm.), allowing an interval of five days between the exposures. In this manner the nodules may be made to disappear with the minimum amount of reaction, usually nothing more than a moderate erythema. In the so-called "massive dose" method, doses of six to eight H. are given at intervals of three or four weeks, producing a decided dermatitis, sometimes with superficial necrosis. This latter method of

treatment is more effective than the moderate dose method in cases in which there is marked infiltration with thick rugous cicatrices; but the danger of producing ulceration, which may require months for healing and which is apt to be followed by scars disfigured by numerous telangiectases, is considerable. In many cases a combination of phototherapy and the X-ray produces much better results than either alone. The treatment should be begun as a rule by the X-ray, especially if ulceration is present, and when the ulcers have healed and improvement seems to be at a standstill phototherapy may be begun.

In the treatment of lupus of mucous membranes phototherapy cannot be employed owing to the inaccessibility of the lesions, although the use of the X-ray is at times quite practicable. In lupus of the nasal and palatal mucous membranes, cauterization with the galvanocautery is an effective method of treatment, repeating the cauterizations at intervals until the disease is destroyed. The curette may likewise be employed under local anæsthesia, followed by cauterization with trichloracetic acid. In lupus of the nasal mucous membrane the method of Pfannenstiel is frequently effective. This method consists in the internal administration of iodide of sodium and the application of tampons of gauze within the nose, which are kept wet with hydrogen peroxide, which sets free nascent iodine.

TUBERCULOSIS VERRUCOSA CUTIS

Synonyms.—Lupus verrucosus; Lupus sclerosus; Verruca necrogenica; Anatomical wart; Postmortem wart.

Although this form of cutaneous tuberculosis had been previously described by Leloir and others as a variety of lupus under the names lupus verrucosus, lupus sclerosus, it was Riehl and Paltauf who, in

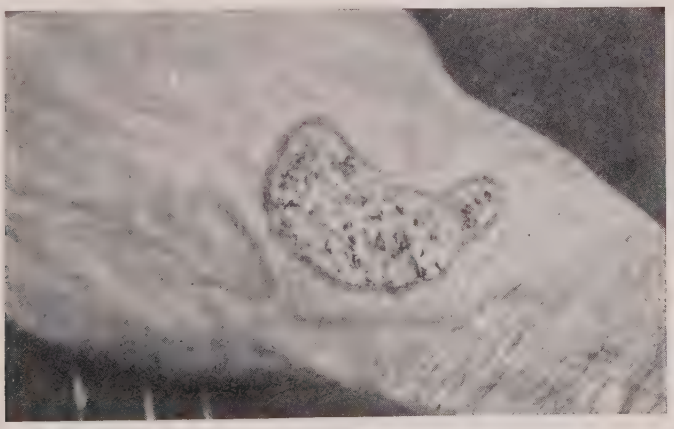


Fig. 74.—Tuberculosis verrucosa cutis, back of hand. Patient developed pulmonary tuberculosis later.

1886, first definitely demonstrated its tubercular nature, and gave it the name of tuberculosis verrucosa cutis.

Symptoms.—It usually begins as a flat, dusky-red or violaceous nodule, situated in most cases upon the back of the hand or fingers,

which slowly and painlessly enlarges peripherally, and soon becomes covered with small horny scales or papillary elevations, which give it a wart-like appearance. When fully developed it presents the appearance of a flat, usually rounded, slightly elevated plaque surrounded by a narrow, purplish-red border and a more or less well-marked papillomatous surface covered with grayish, hard, adherent crusts. Occasionally miliary pustules are scattered over the surface, according to Riehl and Paltauf, especially in the border, and thick cheesy pus may be expressed from the sulci between the papillæ which cover its surface. The patches, usually the size of a coin and rounded in shape, may reach a much more considerable size and be quite irregular in outline. In a certain proportion of cases the papillomatous feature is only moderately developed; the surface of the plaque is rough and grater-like, covered with small, adherent, horny scales instead of

Fig. 75.—Tuberculosis verrucosa cutis. (Negro.)

the usual papillæ and crusts. As a rule there is but one lesion, but it is not at all uncommon for two or more to be present; quite rarely there may be many patches scattered over a considerable area. The favorite location for the lesions is the back of the hand (Fig. 74), but they may occur upon the forearm or upon the lower extremities (Fig. 75), but are rarely seen upon the trunk.

The progress of the affection is commonly slow, the patches changing little from month to month when once they have reached some size. Occasionally symptoms of acute inflammation, such as redness with swelling and some pain, appear, but these usually soon subside. After a variable time, usually many months, or it may be a year or two, the older portion of the patch may become less elevated and smoother and may eventually disappear leaving a thin scar, while the more recent part slowly advances. Sometimes spontaneous involution of the central portion of the plaque takes place, so that an irregular

papillomatous ring is formed, which surrounds a smooth scar. Ulceration may occur, but this is a decidedly unusual termination. Subjective symptoms of any sort are, as a rule, absent, although pain is occasionally present, particularly when the lesion becomes acutely inflamed.

Verruca Necrogenica.—The verruca necrogenica of Wilks, or anatomic wart, is a variety of the foregoing and has many features in common with it, both clinically and histologically. It begins as a small, rather firm, deep-seated red nodule, upon which a pustule develops sooner or later, which is soon followed by a crust which falls off after a time, leaving an uneven papillomatous surface. As it slowly enlarges the papillomatous character of the lesion usually becomes more pronounced, and it then resembles the verrucose lesions described by Riehl and Paltauf. There is rarely more than a single lesion, situated in most cases upon the back of the hands, over the knuckles, varying in size from that of a small pea to a bean. Occasionally the infection extends to the lymphatic vessels, producing a tuberculosis lymphangitis, which may be followed by general infection, a sequel which, according to Knickenberg and others, is more apt to occur after this lesion than after the tuberculosis verrucosa of Riehl and Paltauf. The course of the affection is practically the same as that of other forms of wart-like tuberculosis of the skin; its progress is usually very slow, and spontaneous involution occasionally takes place.

Etiology.—Verrucose tuberculosis is due to the direct inoculation of the bacillus tuberculosis into the skin. As already noted, it is situated upon exposed parts, particularly the hands, where inoculation readily takes place through some one of the abrasions which are so frequently present upon these members. It is found more frequently upon the hands of those who come into direct or indirect contact with animals, particularly such as butchers, than of those of other occupations. There is no doubt that it is occasionally the result of autoinoculation, a striking example of this mode of origin having been under the author's observation some years ago. A gentleman who was the victim of pulmonary tuberculosis developed a typical verrucose tuberculosis upon his right thumb, which he was in the habit of biting, in fits of abstraction, and there is little doubt that inoculation of the skin occurred as the result of this habit. Fabry has called attention to the unusual frequency with which German miners suffer from the affection, a frequency which he believes is the result of inoculating abrasions upon the hands by wiping the mouth with the back of the hand, many of the miners suffering from pulmonary tuberculosis. Verruca necrogenica occurs upon the hands of those who are brought into contact with dead bodies, and is a disease especially of anatomists, dissecting-room attendants, pathologists, etc.

Pathology.—Very pronounced histological changes are present in both the epidermis and the corium. There is a more or less marked hyperkeratosis; the rete mucosum is greatly increased in breadth,

sending long irregular branching and anastomosing processes well down into the corium, and contains a considerable number of miliary abscesses. The papillary body is filled with lymphoid, epithelioid and scattered giant-cells, and numerous foci of similar cells are scattered throughout the upper portion of the corium. Tubercle bacilli are usually more numerous than in lupus and are usually found in the giant-cells (Fig. 76).

Diagnosis.—It is only when the lesions are small and in the early stage that they are at all likely to be mistaken for warts or simple

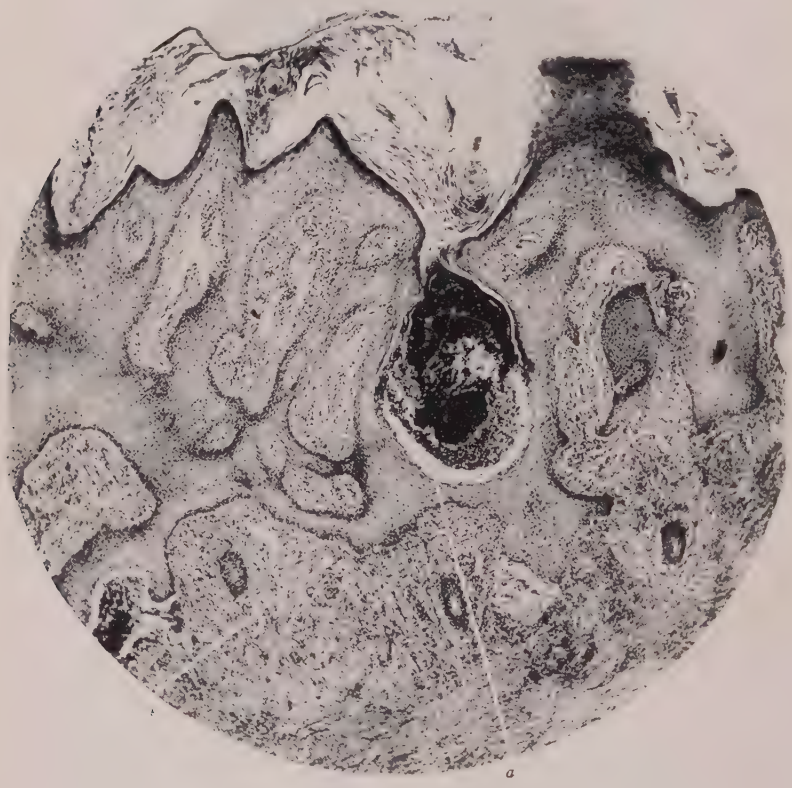


FIG. 76.—Tuberculosis verrucosa cutis. Enormous increase in length of the interpapillary downgrowths of the rete mucosum; miliary abscess at *a*; exudate composed of lymphoid and epithelioid cells in corium, with occasional giant-cell, *g*.

papilloma. The infiltrated base on which they are seated and more particularly the narrow violaceous border which surrounds them will serve to distinguish them from such lesions. The resemblance between verrucose tuberculosis and blastomycosis of the skin is oftentimes very close and a differential diagnosis impossible without the aid of the microscope. There is no doubt that formerly these two affections were frequently confounded, and for that matter are yet.

Treatment.—The lesions may be very readily removed by the

curette followed by a thirty per cent. pyrogallol plaster, or they may be excised. When they are flat and not too extensive the pyrogallol plaster alone, without previous curettement, often does well, particularly if the surface is first lightly rubbed with a stick of caustic potash, which should be neutralized by dilute acetic acid before applying the plaster.

TUBERCULOSIS FUNGOSA

In rare instances tuberculosis of the skin may give rise to tumor-like infiltrations and fungoid ulceration resembling more or less sarcoma or granuloma fungoides, such cases having been described by Riehl and Pick under the name tuberculosis fungosa. Morrow, some years ago, reported a remarkable case in which the face was covered by large, bright-red papillomatous formations; and Wickham observed one in which along with other lesions of a frankly tuberculous aspect there were framboesiform papillomatous masses on the foot.

In the absence of other characteristic tuberculous lesions the diagnosis in such atypical cases is attended with much difficulty and uncertainty. Reliance must be placed upon the finding of tubercle bacilli in the tissues, or the demonstration of their presence by experimental inoculations.

TUBERCULIDES

In 1896, Darier proposed the term "tuberculide" to designate the members of a group of eruptions, most of them of acneform type, which, while constantly associated with evidences of tuberculous infection, were not themselves demonstrably tuberculous—the tubercle bacillus, with one or two doubtful exceptions, was not found in them, nor was their histopathology such as is usually found in tuberculous diseases. He included under this term acne cachecticorum, acne scrofulosorum, disseminate erythematous lupus (Boeck), and a small group of very closely related, if not identical, diseases, disseminate folliculitis, acnitis, folliclis, hydradenitis destruens suppurativa, and "unnamed granuloma." To these, later investigators have added a number of other affections, such as erythema induratum, sarcoid, particularly the sarcoid of Boeck, and pityriasis rubra (Hebra). Hallopeau proposed to apply the term to all tuberculous affections of the skin which he divided into two classes, viz., those in which the bacillus tuberculosis is constantly present, bacillary tuberculides, and those in which this organism cannot be found, toxituberculides, these last being due to tuberculous toxins. As the toxic character of the latter class is as yet largely hypothetical, Hallopeau's suggestion has not been generally accepted. Indeed, the recent improvements in the technic of tissue examination, such as the use of antiformin, and the discovery by Much of forms of the tubercle bacillus which are not acid-fast and which differ in their morphology from the ordinary rod-like forms, have resulted in the demonstration of the presence of the bacillus in some of these supposedly toxic varieties of eruption, and it seems likely that the bacillary character of all or most of them will eventually be demonstrated.

As most of these diseases have already been described elsewhere, we shall consider here only a small group of acne-like eruptions which have been variously named, and which are regarded by a considerable number of authors as clinical variations of a single affection.

PAPULO-NECROTIC TUBERCULIDE

Synonyms.—Lupus erythemateux disseminé (Boeck); small pustular scrofuloderm (Duhring); folliclis (Barthelemy); tuberculide (Darier); folliculitis exulcerans (Lucasiewicz); acrodermatitis pustulosa hiemalis (Crocker).

Definition.—An eruption of tuberculous origin characterized by discrete red and violaceous papules with necrotic centres, followed by pit-like scars.

Symptoms.—The eruption begins as small red points which mark the site of shot-like nodules deeply imbedded in the skin. These

Fig. 77.—Papulo-necrotic tuberculide.

nodules, as they approach the surface, form distinct, rather hard papules of a dusky-red or violaceous color upon the summits of which small pustules or less frequently vesicles form, which dry into blackish crusts beneath which are small, deep excavations. After a somewhat variable period, usually several weeks, these crusts fall, leaving pit-like scars which are more or less pigmented for a time, but which eventually become white. The lesions are discrete and without any definite arrangement; they are usually found upon the backs of the hands (Fig. 77), particularly the backs of the fingers, on the forearms, around the elbows, and much less frequently upon the lower extremities, usually about the knees and ankles. The face is usually but not always free. The ears are occasionally attacked, and in long-standing cases in which there are many scars, the helix may present considerable

deformity, looking as if it had been gnawed. In most cases little or no pain accompanies the eruption, but exceptionally some of the lesions may be quite sensitive. It may come out in successive crops or appear quite irregularly, the number of lesions present at any time varying from a dozen to forty or fifty. The course of the affection is usually slow and irregular, each lesion consuming from four to six weeks in its evolution, and the disease as a whole lasting from one year to several years, with occasional periods of quiescence.

In a large proportion of the cases there is more or less noticeable cyanosis of the extremities—the hands, feet and ears are dusky red or bluish, as if cold, and the blood returns with unusual slowness when pressed out of the skin. In practically all cases there is evidence of tuberculous infection, such as swelling or suppuration of the lymphatic glands, caries, or less frequently pulmonary tuberculosis. In a young girl under the author's care some years ago, the cutaneous lesions were associated with tuberculous arthritis of the hip-joint and a well-marked erythema induratum.

Etiology.—It occurs most frequently in children and adolescents, but is occasionally seen in older subjects. According to the observations of Nobl, it is a fairly frequent affection in children, since he found thirteen cases among 450 children ill with various diseases.

While all authorities are practically of one mind as to its tuberculous origin, there is some difference of opinion as to whether it is to be regarded as a bacillary or a toxituberculide. Until recently the majority have inclined to the latter view, owing to the almost invariable failure to find the bacillus or to produce tuberculosis by experimental animal inoculation. Recent improvements in the technic of tissue examination and the introduction of new methods of staining have increased the number of cases in which the bacillus has been found. Quite recently Hidaka has found it with Much's granules in the lesions; and it would seem as if the bacillary character of the eruption had been demonstrated.

Pathology.—Barthelemy thought it a special type of folliculitis, but this was soon shown to be erroneous. It begins with changes of an inflammatory character in and about the blood-vessels in the deepest part of the corium, which extend thence to the more superficial portions. There is an abundant exudation of leucocytes about the vessels and in their walls, leading to great thickening of the latter, which together with swelling of the endothelium produces narrowing or even complete occlusion of their lumina. In advanced stages of the lesions there are considerable areas of necrosis, usually in the deeper parts of the corium surrounding vessels with greatly thickened walls.

Diagnosis.—The localization of the eruption, commonly upon the back of the hands, and about the elbows and knees, with occasional involvement of the rims of the ears; the central necrosis of the papules resulting in the formation of small black crusts covering pit-like excavations with consequent pit-like scarring; its association with symptoms

of tuberculosis, such as chronic adenitis, caries or pulmonary tuberculosis, are features so characteristic that the disease is usually recognized without difficulty.

Treatment.—The patient should have an abundance of nutritious food and should live in the open air as much as possible. In a young man under the author's care for a considerable time, with a typical eruption, decided improvement promptly followed the giving up of work in an office for a life outdoors. Iron alone, or with moderate doses of arsenic, may be given in anæmic subjects, and codliver oil is especially useful in children. Locally mercurial ointments, such as ammoniated mercury, twenty grains (1.30) to the ounce (32.0), a lotion of bichloride of mercury, 1:2000, or one containing fifteen grains (1.0) each of sulphate of zinc and sulphuret of potash to the ounce (32.0) of water, may be employed with more or less benefit.

Prognosis.—The prognosis as to the eventual disappearance of the eruption is favorable, particularly in those cases in which there is no extensive tuberculous infection involving important organs. The course of the disease, however, is in most instances a prolonged one, extending over many months or years.

TUBERCULOSIS MILIARIS CUTIS

Synonyms.—Tuberculosis propria cutis; Tuberculosis cutis orificialis; Miliary tuberculosis of the skin.

Symptoms.—This, the first definitely recognized form of tuberculosis of the skin and for a time thought to be the only true cutaneous tuberculosis, was first described clinically and histologically by Jarisch and Chiari. The earliest stage of the affection is a small pin-head-sized yellowish-red nodule which speedily softens, breaks down and forms an ulcer, and it is usually in the ulcerative stage that it first comes under observation. The ulcers are usually shallow, of irregular or roundish shape with thin, occasionally slightly undermined, unevenly indented borders and a pale red or grayish-yellow floor, secreting a scanty seropurulent fluid. Small reddish nodules appear at the edges of the ulcers from time to time, soon break down and increase the area of the ulcer, giving to its borders a polycyclic contour. Abortive attempts at cicatrization may occur, but spontaneous healing rarely takes place. At times the ulcers are accompanied by severe pain. The sites of predilection are the mucocutaneous orifices. The ulcers may be situated on the lips, about the edges of the nostrils, around the anus, or on the labia, sometimes extending into the vagina, but they may also occur upon other portions of the cutaneous surface. They may be single or multiple, and in the latter event two or more may coalesce to form quite extensive serpiginous lesions. The affection is seen exclusively in those suffering from pulmonary or laryngeal tuberculosis and usually pursues a rather acute course, lasting but a few months as a rule. A number of cases affecting the genitalia of male infants have been reported as the result of ritual circumcision, the operator having been the subject of pulmonary tuberculosis.

Diagnosis.—The tuberculous character of these ulcers is usually readily recognized; their situation about the mucous orifices and their association with pulmonary or laryngeal tuberculosis are always suggestive of their tuberculous character. Tubercle bacilli are usually quite abundant and are easily found in the discharge or in scrapings from the bottom of the ulcers.

Treatment.—Probably the best local application is iodoform lightly dusted over the ulcer. If the odor is objectionable, europhen or aristol may be used instead, but is less effective.

Acute disseminated miliary tuberculosis of the skin was first described by Heller, and other cases have since been reported by Leichenstern, Pelagatti, and a number of others. It is characterized by an eruption of quite small papulopustules and red nodules scattered about on the face and extremities in variable numbers. The eruption usually appears quite suddenly and shows a decided tendency to come out in successive crops. After a time many of the lesions undergo spontaneous evolution and may disappear without leaving any trace, or they may ulcerate, forming small, round, punched-out ulcers. Practically all the cases thus far observed have occurred in children, and have been part of a general miliary tuberculosis, or have been associated with tuberculous meningitis; a considerable proportion of them have followed measles or scarlet fever.

The treatment is altogether secondary to that of the general tuberculosis, which it accompanies, and needs no special consideration.

ERYTHEMA INDURATUM

Synonyms.—Erytheme induré des scrofuleux; Bazin's disease.

Definition.—A chronic disease situated for the most part upon the legs, characterized by deep-seated nodules with redness of the overlying skin, and ulceration.

Symptoms.—This affection, which was first described by Bazin, begins with one or more pea- to nut-sized, firm, painless nodules deeply situated in the hypoderm. These slowly enlarge, and as they near the surface the skin over them assumes a dull-red or violaceous hue and becomes adherent. When there are several nodules, as is not infrequently the case, a violaceous plaque of considerable size may be formed having an uneven nodular surface. Having reached this stage, it may remain without much change for some months and then slowly disappear by absorption, leaving a depressed atrophic area with some pigmentation. More often, however, one or more openings form in the skin, discharging a seropurulent fluid, which enlarge to form ulcers of variable shape and extent. As a rule little or no pain attends the affection, although there are occasional exceptions. In the great majority of cases it is confined to the legs, most frequently the lower part of the calf (Fig. 78), although it may also occur upon the anterior

surface, and exceptionally upon the thighs. In a few instances it has been observed upon the arms. Its course is commonly slow and irregular. Partial or even complete healing of the ulcers may take place, followed shortly by relapse. New nodules may appear from time to time which form new ulcers, and in this manner the disease may continue for two or three years before definite recovery takes place.

Etiology and Pathology.—Its subjects are, for the most part, girls and young women under twenty years of age, although it is sometimes seen in middle-aged women. It is decidedly rare in males, but not unknown; quite recently the author has seen an example of it in a young man twenty years old. As a rule to which there are few exceptions, evidences of present or past tubercular infection, the latter often in the shape of scars in the neck the result of an adenitis, are present. In many cases the patient suffers from a sluggish venous circulation, as shown by a more or less marked dusky hue of the extremities commonly much more noticeable in cold weather, the so-called chilblain circulation.

FIG. 78.—Erythema induratum with papulonecrotic tuberculide. Irregular ulcer on calf surrounded by palm-sized violaceous area. Small scars on upper portion of leg followed the tuberculide.

The histopathology is in the main that of tuberculosis, although not all observers are agreed as to details, some finding only inflammatory changes. Special features are a marked leucocytic infiltration of the walls of the vessels, particularly of the veins, causing at times an enormous increase in their thickness with narrowing or obliteration of their lumen, and an atrophy of the fat tissues. The studies of Harttung and Alexander, the successful inoculation experiments of Thibierge and Ravaut and others, the reaction of the lesions to tuberculin, as observed by Mantegazza and Jadassohn, leave but little room for doubt concerning the tuberculous character of the disease. Whitfield is of the opinion that there are two varieties of the malady, which, while resembling each other closely in their clinical symptoms, are etiologically different. One is a tubercular affection, seen in young subjects; the other is an inflammatory disease, a nodular phlebitis, and occurs in middle-aged individuals. He would explain in this way the discrepancies in the histological findings of various observers.

Diagnosis.—The two affections for which it is most apt to be mistaken are erythema nodosum and the syphilitic gumma.

The first is an acute disease which appears quite suddenly, is accompanied by pain and tenderness, the latter often marked, and is usually situated on the anterior surface of the leg over the tibia, while erythema induratum is a chronic affection, unaccompanied by pain as a rule, and is situated on the posterior surface of the leg, on the calf in most cases. The syphilitic gumma usually occurs in adults, ulcerates much earlier than erythema induratum, and produces round, sharp-cut ulcers unlike the ulcers with ragged edges in the latter.

Treatment.—The patient should be regarded as a tuberculous subject and treated accordingly. Codliver oil, iron, particularly the syrup of the iodide of iron, and small doses of arsenic, are all more or less useful, the first-named being more serviceable than the others.

Whitfield and more recently McKee have reported decidedly beneficial results from injections of tuberculin.

Rest in the recumbent position, with elevation of the limb, is to be advised; when this is not possible, as frequently happens, the patient should wear constantly, when not in bed, a properly applied roller bandage, or, what is much better, an elastic bandage.

Iodoform, aristol, or europhen dusted on the ulcers once or twice a day, are useful local applications, the first being the best, but objectionable on account of its odor. A stiff ointment of ammoniated mercury, 30 grains (2.0) to the ounce (32.0), is likewise useful. At each dressing the ulcers should be carefully cleansed with a saturated solution of boric acid or some other mild antiseptic wash.

SCROFULODERMA

Synonyms.—Tuberculosa gummosa; Tuberculosis colliquativa cutanea; Fr., Gomme scrofulo-tuberculeuse; Cold abscess of the skin.

Under the name scrofuloderma were formerly included a considerable number of chronic inflammations of the skin attended by suppuration and ulceration, occurring in individuals of the so-called strumous diathesis. At the present time the use of the term is restricted to certain chronic affections of the skin, chiefly of an ulcerative type, secondary to tuberculous adenitis and to circumscribed nodular gumma-like infiltrations of the subcutaneous tissue.

Symptoms.—The most frequent and characteristic form is that which occurs in connection with chronic tubercular adenitis of the cervical glands in children and young adults. It begins with swelling of a gland, often at the angle of the jaw, which slowly and painlessly enlarges until it reaches the size of a nut or a pigeon's egg. After a considerable period, usually some months, the overlying skin becomes red and adherent to the gland beneath, softening of the gland occurs, the skin becomes bluish, thin, and eventually gives way, and an ulcer with thin ragged, undermined edges is formed which discharges a thin seropurulent fluid. Not uncommonly several glands are affected

simultaneously or in succession and a considerable tumor with irregular nodular surface is formed over which the skin opens in several places, giving rise to a number of ulcers which may eventually unite. Sinuses which burrow immediately beneath the skin, producing long cord-like ridges or extend deeply down to the periglandular tissue, are frequently associated with the ulcers. Occasionally typical lupus nodules form about the external opening of such sinuses and may serve as the starting point for a spreading patch of this disease.

The course of the affection is extremely chronic; when ulceration has occurred it may continue for one, two or three years. So long as any remnant of glandular tissue remains, the sinuses continue to discharge and the ulcers remain open. When recovery takes place more or less scarring, often of an unsightly character, follows.

Instead of following an adenitis, the ulceration may be preceded by one or more deep-seated nodules in the hypoderm which slowly enlarge and over which the skin becomes red and finally ulcerates. This is the so-called scrofulous gumma which frequently bears a considerable resemblance to the syphilitic gumma.

Occasionally such ulcers, as well as those which are associated with adenitis, become the seat of considerable fungoid masses of granulation tissue.

Ulcers of a similar kind may occur in connection with tuberculous lymphangitis through the breaking down of the small nodules which are distributed along the course of the lymphatic vessels.

A much less frequent form of scrofuloderma begins as small intradermic nodules which after a time soften and produce small punched-out ulcers. In rare instances variously-sized firm nodules appear in the hypoderm, which after a variable period slowly disappear without involving the skin, as in the case reported by Wende.

Etiology and Pathology.—In the largest proportion of cases the subjects of the scrofulodermata are children or quite young adults, because the tuberculous affections to which they are secondary, such as adenitis, are far more common in these than in older individuals. The tuberculous character of the affection has been well established, the tubercle bacillus having been repeatedly found by a number of observers, although it is not always easily demonstrated. The histology of the lesions is in all essentials that of other forms of tuberculosis, but there is more extensive necrosis than in some other forms, such as lupus, for example, and there is frequently much more inflammatory reaction, as indicated by an abundant exudation of leucocytes about the necrotic areas. According to Unna the extensive necrosis is due to the toxic effect of considerable collections of bacilli.

Diagnosis.—Scrofulous ulcers and sinuses of the neck, secondary to adenitis, are usually so characteristic in appearance that mistakes in diagnosis are not likely to occur, but they may be confounded with syphilis and actinomycosis. From the former they are to be distinguished by the youth of the patient, the absence of other symptoms

of syphilis, and their frequently evident association with a chronic adenitis; from the latter by the absence of the peculiar sulphur-yellow granules composed of actinomycetes from the discharge. The scrofulous gumma often bears considerable resemblance to the gumma of syphilis, but the latter usually runs a much more rapid course and forms round sharp-cut ulcers, while the ulcers resulting from the former are usually quite irregular in shape, with ragged, livid, undermined edges.

Treatment.—The local treatment is essentially surgical. Suppurating glands should be removed, sinuses divided and curetted, and dressings of iodoform, aristol, or bichloride of mercury applied. Pusey and others have obtained good results from the use of the X-ray.

LICHEN SCROFULOSORUM

Synonym.—Lichen scrofulosus.

Definition.—A chronic inflammatory disease of the skin occurring in tuberculous subjects, characterized by an eruption of small red or yellowish-red scaly, follicular papules, arranged in round and circinate patches.

Symptoms.—It begins with the appearance of pin-head- to millet-seed-sized discrete papules which are soon covered with a small, thin, only slightly adherent scale, and which are usually arranged in round, circinate, and crescentic patches, but which may also occur in irregular areas, sometimes of considerable extent, without any particular arrangement. The papules are at first red or brown-red in color, but gradually fade to a pale yellow, and may even become the color of the normal skin. After a variable duration, usually many months, they begin to undergo slow involution and eventually completely disappear, leaving nothing more than a slight and transient pigmentation. In addition to the papular lesions there are quite commonly a few scattered miliary vesicles, pustules and patches of follicles the mouths of which contain small, slightly projecting horny spines (lichen pilaris). The eruption is usually confined to the trunk (Fig. 79), particularly the sides of the thorax, the abdomen, and to a less degree, the back; the extremities are only infrequently affected, and when these are invaded it is the legs rather than the arms. On the latter the lesions may present a decidedly livid appearance owing to slight hemorrhage into the follicles (lichen lividus). Beyond occasional slight itching the eruption is accompanied by no subjective symptoms. Occasionally a variable number of acne-like papules and pustules are scattered over the lower extremities and the face which pursue the usual course of ordinary acne lesions (acne scrofulosorum). In the more marked cases eczema of the pubic region, the groins and scrotum may be present, which in the pubic region is apt to be of the pustular type, and which is usually accompanied by abundant oozing and crusting and an extremely offensive odor.

As an atypical form of lichen scrofulosorum mention may be made here of a lichenoid eruption observed recently by Bosellini and Vignolo-Lutati in tuberculous individuals. In the cases reported by these authors there was an eruption of flat, red papules, some of them umbilicated, situated upon the backs of the hands and the forearms, which

FIG. 79.—Lichen scrofulosorum.

resembled closely the papules of lichen planus. Both patients were adult females and suffered from pulmonary tuberculosis.

Etiology and Pathology.—Lichen scrofulosorum is confined to children and adolescents and is most frequent in the second decade of life; it is rare after twenty.

In the great majority of cases, in ninety per cent. according to the observations of Hebra, it occurs in those who suffer from swollen or suppurating glands, from periostitis, caries of bone, chronic ulcers,

or other evidences of tuberculous infection. Jadassohn found symptoms of tuberculosis in fourteen out of nineteen typical cases.

Histologically it is a folliculitis of special type. As was pointed out by Kaposi, who was the first to study its histopathology, the histological changes are confined to the follicles with their glands, and the papillæ immediately adjacent to the follicles. In and around these is a circumscribed cellular exudate consisting of epithelioid cells, a lesser number of giant-cells surrounded by a border of variable width made up of leucocytes. The tissue changes, in a word, are such as are usually found in tuberculosis.

In the epidermis the alterations are usually trifling, and consist for the most part of a slight hyperkeratosis and a moderate invasion of the rete by leucocytes which lie in the interepithelial spaces.

The search for tubercle bacilli in the lesions has for the most part been a vain one, but Jacobi and Wolff have reported the finding of a few bacilli; their cases, however, were not typical ones. In both the atypical cases with lesions like those of lichen planus reported by Bosellini and Vignolo-Lutati, tubercle bacilli were found in the papules. Haushalter and Pellizzari both succeeded in producing tuberculosis in the guinea-pig by inoculations with lesions taken from cases under their observation, but in Pellizzari's case the first attempt was unsuccessful, and it was only after the papular eruption had been replaced by an atypical pustular one that inoculation succeeded. In a number of instances a more or less characteristic reaction has been noted after injections of tuberculin. Jadassohn observed a reaction in fourteen out of sixteen cases treated with this agent. A few instances have been reported in which an eruption resembling lichen scrofulosorum has followed such injections, but none of them is free from criticism. Quite recently Nobl has reported five cases in which a typical eruption followed inunctions of tuberculin ointment.

Upon the whole, the weight of evidence seems to be in favor of the view that the eruption is not a bacillary one, but one due to tuberculous toxins.

Diagnosis.—Lichen scrofulosorum is to be distinguished from the small papular syphiloderm and from papular eczema.

The papules of syphilis are somewhat larger and firmer than those of lichen, are a deep-red or brownish-red color and are found on the face and extremities, situations usually avoided by lichen. Other characteristic symptoms of syphilis are also likely to be present.

In papular eczema the lesions are of a bright-red color, show no tendency to arrangement in round and circinate patches, and are accompanied by severe itching.

Treatment.—The internal and external use of codliver oil, as advised by Hebra, is usually followed by the disappearance of the eruption in a short time. Instead of codliver oil inunctions, which are extremely disagreeable, other less unpleasant fats may be used, and with equally good results. Crocker found plain vaseline, or vaseline with five grains

of thymol or five minims of oil of cade to the ounce (32.0), quite as useful as codliver oil. Equal parts of lanolin and vaseline with one per cent. of salicylic acid may also be used with good effect.

SARCOID

The term sarcoid was first employed by Kaposi to designate a group of new growths of the skin, such as mycosis fungoides, lymphoderma perniciosa, and a few others which, while resembling sarcoma in their histopathology, differed from that malady in their clinical course and termination. More recently it has been applied by Boeck, Darier, and others, to a small group of diseases which, with the exception presently to be noted, are either closely related to tuberculosis or are actually tuberculous. According to Darier there are four varieties of sarcoid: (*a*) The affection first described by Boeck under the name multiple benign sarcoid for which he later substituted the name miliary lupoid; (*b*) the subcutaneous sarcoid of Darier-Roussy; (*c*) a variety which resembles the erythema induratum of Bazin; (*d*) the round-celled neoplasm described by Spiegler, Fendt and others under the name sarcoid, which, while clinically resembling the preceding forms, is probably related to them only by a superficial resemblance.

MULTIPLE BENIGN SARCOID (BOECK)

Synonym.—Benign miliary lupoid.

Definition.—A chronic disease of the skin characterized by large and small red and brownish-red nodules and variously-sized bluish-red plaques, probably of tuberculous origin.

This affection was described for the first time by Boeck, in 1899, although the cases described by Hutchinson in his *Archives of Surgery* a year before, under the name of Mortimer's malady, were probably examples of the same disease, as was suggested by Boeck himself.

Symptoms.—Acording to Boeck the eruptive lesions are of three kinds—small nodules or papules; large nodules; and ill-defined infiltrations or plaques. The nodules vary in size from that of a pin-head to a small nut, are bright red when they first appear, but as they grow older, become bluish-red, brownish-red, and finally brown. By the slow peripheral growth of some of the nodules, ill-defined bluish-red plaques are gradually formed with narrow, yellowish, slightly elevated and occasionally finely scaly borders and depressed atrophic centres in which are numerous fine vessels. The eruption usually appears rather suddenly and in the beginning may be accompanied by redness and swelling of the skin with itching which subsides in the course of ten days or two weeks. Or it may begin slowly and almost imperceptibly, the nodules being deep-seated at first, producing distinct elevations only after some little time as they approach the surface. The lesions are found most frequently in the face, on the upper portion of the trunk, the extensor surface of the upper extremities, and exception-

ally in the scalp. As a rule they are distributed more or less symmetrically and show decided tendency to occur in the scars of old lesions. Examined under glass-pressure (diascopy), all varieties of lesion, both the nodules and plaques, show fine yellowish or grayish puncta, a feature which Boeck greatly emphasized, and which led him to substitute the name miliary lupoid for sarcoid. In a considerable proportion of cases the eruption is accompanied by swelling of the lymphatic glands. The course of the disease is usually extremely slow and it may continue for years. After remaining for months without much change the lesions become depressed in the centre, flatten out, and eventually completely disappear, leaving a slight brownish pigmentation or an atrophic telangiectatic scar.

In the *sarcoid of Darier-Roussy* the lesions are situated in the hypoderm and are small to large nut-sized, round or oval painless nodules over which the skin, at first movable, becomes adherent and red or violaceous. They may be discrete, may form nodular cords following the course of the vessels, or they may unite to form variously-sized, ill-defined bluish plaques with uneven surface. They appear very gradually and show no tendency to softening or ulceration. They are usually, according to Darier, exclusively situated upon the trunk, and are seen only in adults.

In the sarcoid resembling erythema induratum, cases of which have been reported by Pelagatti, Thibierge and Bord, Darier and others, there are nut-sized and larger livid swellings which occasionally ulcerate, and which are situated upon the extremities, chiefly of women.

In the affection described as sarcoid by Spiegler, Fendt and others, there are multiple variously-sized tumors and infiltrated plaques of a red or bluish-red color situated deeply in the skin. They are found usually upon the trunk and pursue a variable course, sometimes rapid, at others slow, and although ulceration is not the rule it may occur. Partial or complete involution may follow the administration of arsenic.

Etiology and Pathology.—The affection occurs as a rule in adults, but few cases having been observed before puberty, and is decidedly more frequent in women than in men.

In about one-third of the reported cases evidences of tuberculosis were present, usually referable to the lymphatic glands, and in about the same proportion of cases a positive tuberculin reaction was noted. In one of Boeck's cases an acid-fast bacillus was found in an infiltrate situated on the mucous membrane of the nose and a positive result followed experimental inoculation in the guinea-pig.

Although the evidence is far from conclusive, it seems likely that the disease is a tuberculosis of feeble virulence, as has been suggested by Darier.

The histological picture presented by the Boeck type is a very characteristic one. In the corium are rounded or irregularly-shaped sharply circumscribed collections of epithelioid cells, with an occasional rather small giant-cell, a few plasma cells and lymphocytes, the last

about the borders (Fig. 80). The central portion of the older areas show some evidence of degeneration; the cells are less well-defined, and do not stain sharply, and the elastic tissue has disappeared.

In the Darier-Roussy type the tissue changes are situated in the hypoderm and resemble more or less closely those found in tuberculosis. There are collections of epithelioid cells with numerous giant-cells of the Langhans type, with lymphocytes and a few plasma cells and "mastzellen." These cell areas are much less well-circumscribed and more extensive than in the Boeck variety. In the third variety of sarcoid the histological changes are practically the same as those present in erythema induratum.

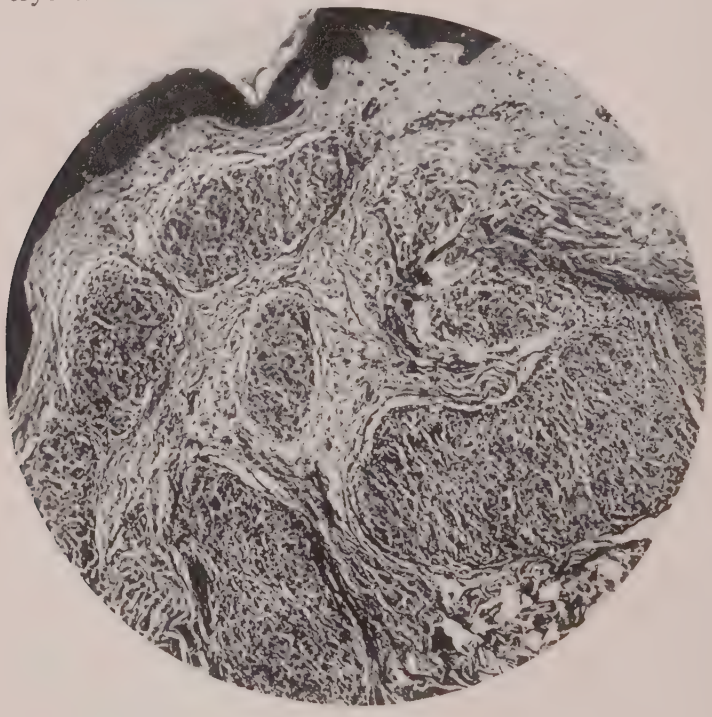


FIG. 80.—Multiple benign sarcoid. Rounded and oval areas of cells, chiefly of connective-tissue type, with a few epithelioid cells. Low power.

In the Spiegler-Fendt sarcoid the tumors present the histological features of a lymphogranuloma. They are made up of well-circumscribed, sometimes encapsulated collections of large and small round cells situated in the corium and subcutaneous tissue.

The first two members of this group without much doubt represent varieties of the same disease, but it is very doubtful whether the third member is anything more than a somewhat atypical form of erythema induratum. As to the Spiegler-Fendt disease, it is quite distinct both in its histopathology and almost certainly in its etiology from the other three and probably ought not be included with them.

Diagnosis.—The diseases from which it is to be distinguished are lepra, syphilis, the nodular form of erythematous lupus, leukæmia cutis and erythema induratum. From all of these it differs in a number of particulars, such as the absence of ulceration and the presence of fine yellowish points in the lesions which are best seen under glass-pressure, this last feature being regarded by Boeck as almost pathognomonic. While its clinical features are often sufficient to distinguish it from the diseases which resemble it, a biopsy is frequently necessary to establish the diagnosis.

Treatment.—In all of Boeck's cases the eruption disappeared under vigorous arsenical treatment. In order to obtain the best results with arsenic it is necessary to give the drug in considerable doses, uninterruptedly, for a considerable period. Darier found that the lesion of the subcutaneous variety quickly retrogressed after injections of calomel, of tuberculin and the X-ray, but the effect of these was not permanent. Ichthyol applied to the lesions seems to exert a favorable influence.

Prognosis.—Left to itself, the malady may last almost indefinitely, but under appropriate treatment the eruption usually slowly disappears. More or less scarring usually remains after the disease has disappeared.

SYPHILIS

Definition.—Syphilis is a chronic infectious and contagious disease, acquired or inherited, due to the *spirochæta pallida* or *treponema pallidum,* beginnng in the acquired form with a local lesion known as the chancre or initial sclerosis, and characterized by a great variety of cutaneous eruptions.

It presents three usually well-defined stages, viz., a primary stage beginning with the appearance of the chancre; a secondary stage characterized by generalized eruptions and affections of the adjoining mucous membranes, beginning about four or six weeks after the appearance of the chancre and lasting about a year; and a tertiary stage, which begins at the end of the second or in the third year, characterized by asymmetrical and localized cutaneous lesions usually of an ulcerative character, affecting the deeper portions of the skin and subcutaneous tissues as well as the bones and viscera.

The initial lesion is the port of entry of the infecting organism, and appears about twenty-one days after infection, but the period of incubation may be considerably shorter or much longer in exceptional cases. As a rule it is single, but there may be two or more lesions. In the vast majority of cases it is situated somewhere upon the genitalia. In men it is seen in most instances upon the prepuce or upon the glans penis, in the sulcus behind the corona. Less frequently it is situated upon the shaft of the penis or at the urinary meatus or exceptionally within it. In women the most frequent situations are the labia and the introitus vaginæ; a less common situation is the fourchette.

It presents a variety of forms. It may occur as an oval superficial erosion with a smooth red surface which after a time becomes covered with a grayish pseudomembrane; as a circumscribed superficial or deep ulcer with sharp-cut edges and indurated base, the "Hunterian chancre"; or as a dark-red slightly scaly indurated papule or nodule.

FIG. 81.—Initial lesion of syphilis.

Although, as just stated, the initial lesion is found as a rule upon the genital organs, it may occur anywhere upon the skin or the adjoining mucous membranes. The most frequent sites of the extragenital

FIG. 82.—Initial lesion of syphilis.

chancre are the lips, the tongue, the fingers, and the nipple in women (Plate XVI).

Upon the lips it may occur as a superficial erosion, or an ulcer (Fig. 81) covered with a grayish membrane, accompanied by induration, or it may begin as a fissure which becomes indurated and refuses to heal.

Initial lesion of syphilis. (Patient was a physician with a large obstetric practice and was infected in the practice of his profession.)

Maculopapular syphiloderm.

These are always followed by painless swelling of the submaxillary glands which is often marked. Chancre of the finger, a variety seen most frequently in obstetricians and midwives, is situated in most cases upon the terminal phalanx of the index, occurring as an ulcer often about the root or lateral borders of the nail, sometimes presenting a fungoid appearance owing to the presence of exuberant granulations. Sometimes the whole phalanx is swollen and painful and the nail is eventually lost; the epitrochlear gland is usually decidedly swollen. These lesions are often very sluggish in their course, lasting for months. Chancre of the face usually presents the appearance of a sluggish ulcer with firm infiltrated borders, accompanied by swelling of the parotid or submaxillary glands. Occasionally such lesions may resemble epithelioma to a considerable degree (Fig. 82).

Diagnosis.—The recognition of an initial lesion when situated upon the genitalia is usually easy, but the diagnosis of the extragenital chancre at times is attended with considerable difficulty. An indolent, painless ulcer, of some weeks' duration, with indurated base, accompanied by swelling of the neighboring lymphatic glands, situated upon the lips, fingers, or upon the nipple is most likely to be the initial lesion of syphilis. In case of doubt the treponema should be sought for in the secretion of the lesion by dark-ground illumination or by the India ink method.

SYPHILODERMATA

The first cutaneous symptoms of syphilis usually appear from six to eight weeks after the chancre or initial lesion, but they may occur as early as the third or fourth week and may be delayed considerably beyond the eighth week. The early eruptions, or those of the secondary period, differ considerably from the late eruptions, not only as to the character of the lesions composing them, but also as to their distribution and course. They are, as a rule, more or less general and are often preceded or accompanied by some elevation of temperature, sometimes considerable. In color they vary from a bright-red to a dark-red or "copper-color," and frequently exhibit a more or less decided tendency to an annular or crescentic arrangement. The eruptions of this period usually exhibit more or less marked polymorphism, an important characteristic from a diagnostic point of view. Many of them show a tendency to spontaneous disappearance after a time, leaving pigmentation but seldom scarring. Subjective symptoms are, as a rule to which there are few exceptions, absent or insignificant.

The late lesions, or those of the tertiary period, are usually localized and asymmetrical. They are, as a rule, much deeper seated than the secondary eruptions, frequently extending to the subcutaneous tissues. They are prone to ulceration, producing ulcers with a characteristic reniform or crescentic shape, leaving permanent scars, which, owing to their special characters, such as their shape, smoothness and softness and frequent pigmentation, are often of considerable diagnostic value.

They show little or no tendency to spontaneous disappearance, but may last for years when left untreated. The eruptions of the secondary period exhibit many varieties which differ from one another in the character of the lesions, their number and size, in their distribution and arrangement, and in the course which they pursue. The principal varieties are: the erythematous or macular; the papular; the vesicular, a rare form; and the pustular. With the exception of the first, all of these present a number of subvarieties. The tertiary lesions are: the nodular or tubercular; the gummatous; and a papulo-squamous resembling the papulo-squamous lesion of the secondary stage, but confined to the palms and soles and almost always unilateral.

Erythematous Syphiloderm.—Synonyms.—Syphilid; roseola syphilitica; Ger., Fleckensyphilid (Plate XVI and Fig. 83).

This, the earliest of the syphilitic eruptions, probably never fails to appear, although it is frequently so faint as to escape the patient's observation altogether. It appears from six to eight weeks after the initial lesion as round or oval, pinkish to brownish-red, occasionally somewhat violaceous spots varying in size from that of a small pea to the little finger-nail, scattered over the anterior and lateral portions of the trunk, particularly the lower two-thirds, the flexor surfaces of the arms, the inner surface of the thighs, and the back. It is quite commonly seen on the palms and soles, where it is frequently maculopapular rather than strictly macular and slightly scaly. It is practically never seen on the backs of the hands. When the eruption is faint and violaceous, the skin presents a mottled appearance which becomes much more pronounced after it has been exposed to the air for a few minutes. Moist papules may occur coincidently with this eruption about the corners of the mouth, about the anus, and on the opposed surfaces of the thighs and scrotum. Not infrequently a considerable number of the macules show a tendency to infiltration after a time, becoming maculo-papular, or distinctly papular. While in many cases the patient is apparently in his usual health, the eruption is frequently preceded or accompanied by headache and pains in the limbs, usually much worse at night, sore throat, and a generalized adenopathy. Occasionally there is a continuous fever for a week or two prior to the appearance of the eruption, resembling typhoid fever, for which it is sometimes mistaken.

Fournier has described a variety of erythematous eruption with a marked tendency to recurrences, which occurs in the late secondary or in the tertiary stages. Quite frequently this eruption exhibits an annular arrangement, being made up of red or pink rings and gyrate figures produced by the coalescence of two or more patches.

The eruption usually develops slowly, macules continuing to appear for a week or ten days, but it may come out rapidly, reaching its full development within two or three days. After a period varying from some weeks to a month or two, it slowly fades, leaving a faint transient brownish or yellowish stain. Relapses may occur.

PLATE XVII

Late squamous syphiloderm of the palm.

Diagnosis.—This is usually readily made, but it may at times be mistaken for measles or rötheln. Both of these occur in epidemics and are usually seen in children, while the syphilitic eruption is, for the most part, seen in adults. The catarrhal symptoms which invariably accompany measles are absent in syphilis. In rötheln the macules are smaller and more uniform in size than those of syphilis and more abundant. In both measles and rötheln the face is abundantly covered;

FIG. 83.—Erythematous syphiloderm.

in syphilis it usually escapes. In the syphilitic eruption the initial sclerosis is usually still present, and there are apt to be mucous membrane lesions, such as mucous patches and moist papules about the anus and on the scrotum.

Papular Syphiloderm.—The papular syphiloderm, although less frequent than the macular eruption, is very common. It presents a number of varieties which differ from one another principally in the size

and shape of the lesions and in their anatomical seat. They may be large or small, flat or acuminate; they may be seated in the follicles, or they may occur independently of these.

The small flat papular syphiloderm occurs as small red and brownish-red flat papules from an eighth to a quarter of an inch in diameter. At first they are smooth and some of them remain so, but most of them become slightly scaly after a time and many of them are surrounded by a narrow ring of loosened epidermis, the "epidermic collarette" which is a feature of considerable diagnostic significance.

FIG. 84.—Papular syphiloderm.

Exceptionally the scaling may be quite abundant, in rare cases so much so as to resemble psoriasis. The eruption is usually widely distributed, the papules numerous. It is situated upon the forehead, particularly at the margin of the hair, where it forms the so-called corona veneris, in the face (Fig. 84), about the nose and mouth, upon the trunk anteriorly and posteriorly, avoiding, however, the clavicular region, upon the flexor surface of the arms and in most cases the palms and soles, where the papules are nearly always scaly and sometimes corn-like (corneous papules). Even when very abundant they remain discrete, but occasionally when very numerous they coalesce in certain localities, such as the chin and around the mouth and nose, to form reddish plaques with nodular or uneven surface. Occasionally the eruption

assumes an annular form, the papules being arranged in distinct rings or semicircles. Such annular patches are made up of a number of small confluent papules, or arise through involution of the central portion of papules which continue to extend at the periphery. The favorite site for such patches is the face, where they are situated about the mouth, on the chin, cheeks and forehead. Although this annular form is rare in individuals of the white race, it is not very uncommon in the negro (Fig. 85).

FIG. 85.—Circinate papular syphiloderm.

The papular syphiloderm occurs early in the course of the infection, usually from the third to the sixth month. It may be the first observed, or more commonly it follows the macular syphiloderm with which it may be associated. When it appears early it may be accompanied by sore throat, headache and malaise and elevation of temperature.

Its course is usually sluggish; if left to itself it may persist for months, new lesions appearing to take the place of the older ones which slowly retrogress. When it disappears a faint brownish or yellowish-brown pigmentation is left at the site of the papules which gradually fades.

The large flat papular syphiloderm begins as small red spots which enlarge in circumference and become distinctly elevated, forming round or oval papules varying in diameter from a one-quarter to one-half inch. They are brownish-red in color when fully developed, smooth or very slightly scaly, less so, however, than the small papular syphiloderm. The eruption is usually a rather sparse one, although there are many exceptions to this rule, and the lesions remain discrete. It may occur on any part of the skin, but is most common on the forehead, the lower

FIG. 86.—Annulo-papular syphiloderm. (Secondary.)

part of the face, upon the back of the neck and the upper part of the back (Fig. 86), on the flexor surface of the limbs, the inner surface of the thighs, upon the palms and soles, and about the genitalia and anus. In regions where there are opposed skin surfaces, such as the scrotum and thighs, or between the buttocks, the surface of the papules becomes grayish-white or superficially excoriated, forming condylomata lata. Along with the larger papules smaller ones may coexist and here and there a macule or a pustule may be found, although this eruption is usually quite uniform. In rare instances the papules may undergo

a considerable increase in size; their surface becomes papillomatous or wart-like, and secretes a seropurulent fluid which dries into yellowish crusts. This is the "vegetating" or "framboesioid" syphiloderm of authors. Such lesions are most apt to occur upon the face, in the scalp and about the genitalia. In the bearded region they may resemble the lesions of deep trichophytosis (Fig. 87). The course of the eruption is a chronic one and it may show but little change for months. When it disappears it leaves a slowly fading brownish pigmentation.

Although it may occur quite early, even before the macular eruption has entirely disappeared, it is seen more frequently from four to six months after the initial lesion and occasionally considerably later. Relapses are not uncommon.

Diagnosis.—The recognition of the flat papular syphiloderm is usually easy. The character of the lesions, their distribution, the

FIG. 87.—Sycosiform syphiloderm (framboesiform syphiloderm).

absence of subjective symptoms, their association with moist papules about the anus and genitalia are features of the eruption which usually leave but little room for doubt as to its character. The circinate patches are sometimes mistaken by the inexperienced for ringworm, but the decided infiltration present and the absence of the fungus of the latter make the differential diagnosis easy. Occasionally the papulosquamous lesions, as already noted, may resemble those of psoriasis, indeed in rare instances the resemblance to this disease may be very close, but a careful examination of the whole eruption will be almost certain to disclose an occasional smooth papule, or perhaps a pustule; moreover the syphilitic eruption shows no special predilection for the extensor surfaces of the extremities as does psoriasis, but is more abundant on the flexor surfaces. The framboesiform papules of the bearded region are to be distinguished from parasitic sycosis by the retention of the hair in the follicles, and the absence of the trichophyton fungus.

Follicular Syphiloderm—Synonyms.—Miliary papular syphiloderm; Syphilitic lichen; Lichen syphiliticus; Acuminate papular syphiloderm.

Like the flat papular syphiloderm, the follicular variety occurs in two forms, a large and a small, but both forms of lesions are not uncommonly seen together. While less frequent than the flat variety

FIG. 88.—Miliary papular and pustular syphiloderm.

of papular eruption, it is by no means rare. The papules, which are situated about the mouths of the hair follicles, are acuminate or conical in shape and vary in size from that of a pin-head to a millet seed and somewhat larger. At first a bright red in color, they soon become brownish-red and usually have a small scale on their summit. The eruption may come out quite rapidly, reaching its full development

in two or three days, or, as is more frequently the case, it may require from ten to fourteen days to reach its acme. It is situated upon the face, the trunk, especially the back over the scapulæ, on the outer side of the upper arm and upon the thighs (Fig. 88). Often without any special arrangement, it frequently shows a decided tendency to occur in groups or patches which may be distinctly annular at times, or corymbiform. In most cases a few small pustules are scattered about with the papules. This eruption usually occurs within the first three or four months of the disease and pursues a chronic course.

An unusual variety, characterized by very small papules, occurs as a late eruption, in the great majority of cases in cachectic women. The papules occur in closely aggregated patches resembling those of lichen scrofulosorum. Although red at first, they rapidly fade until they may differ but little in color from the normal skin. This is usually a very chronic form, yielding but slowly to treatment.

Diagnosis.—While the arrangement, distribution and color of the eruption and its association with other evidences of syphilis usually make the diagnosis an easy one, it may be at times confounded with papular eczema, punctate psoriasis, keratosis pilaris, lichen planus and lichen scrofulosorum. Papular eczema is almost invariably accompanied by intense itching, a symptom rarely present to any noticeable degree in syphilis; the papules of psoriasis are uniformly scaly, while those of syphilis are commonly mixed with a few pustules; keratosis pilaris is found as a rule upon the extremities and is a very chronic affection; in lichen planus the papules are flat-topped and more or less pruritic and never associated with pustules; lichen scrofulosorum is rare after puberty and is, as a rule, confined to the trunk, while the small follicular papular syphiloderm is seen for the most part in adults, and occurs upon the face and extremities as well as the trunk.

Vesicular Syphiloderm.—Synonyms.—Syphiloderma vesiculosum; Syphilide eczemateuse; Syphilide herpetiforme.

The existence of this variety of syphilitic eruption has been regarded with considerable scepticism or denied, but the observations of Bassereau, Hardy, Hutchinson, and other equally experienced observers, leave no doubt of its existence, although it is very rare, probably the rarest of all the cutaneous symptoms of syphilis.

A few years ago the author had the opportunity to study a well-marked example of this eruption in the wards of the Philadelphia Hospital. It consisted of numerous small vesicles seated upon a slightly reddened base scattered over the face and extremities and to a less extent upon the trunk without any definite arrangement; within a day or two the contents of the lesions, which at first were transparent, became turbid, and in some instances purulent, and dried into small crusts.

According to the size and arrangement of the lesions, a number of varieties have been described. The vesicles may be quite small and

closely aggregated in patches like those of eczema, or they may occur in well-defined groups like those of herpes, or in ring-shaped patches, the *Syphilide herpetiforme* of Fournier. Occasionally they are quite large and resemble those of varicella. Hutchinson and Crocker have described a variety in which the eruption resembled that of herpes zoster, but differed from that affection in being symmetrical instead of unilateral.

This eruption is, as a rule, an early one, usually occurring within the first six months of the disease, but exceptionally it may be seen much later. It occurs upon the trunk and extremities, and in rare instances in the face. It is a much less persistent form of eruption than the papular, commonly drying up and disappearing in the course of five or six weeks.

Diagnosis.—It may be mistaken for eczema, for herpes and for varicella. From the first-named it is to be distinguished by the absence of oozing and itching, by the presence of other syphilitic symptoms, and the pigmentation which follows it. The herpetiform variety differs from herpes by the papulovesicular character of the lesions, by the symmetrical arrangement of the patches, and by the comparatively slow course of the eruption. The varicelliform variety differs from varicella in being confined to adults, in its much slower development and much longer course.

Pustular Syphiloderm.—Synonyms.—Syphiloderma pustulosum; Acneform syphilid; Ecthymaform syphilid; Syphilid pustulo-crustacée.

While less frequent than the macular and papular varieties of syphilitic eruption, the pustular forms are not at all uncommon. Although not often a very early manifestation of syphilis, they may occur at any period of the secondary stage and occasionally in the tertiary stage. In size and arrangement of the lesions they resemble the papular eruptions and like these are divided into large or small, flat or acuminate varieties, without any special arrangement, or arranged in groups or annular patches (Fig. 89). The lesions may be pustular from the beginning, or they may begin as papules or vesicopapules which shortly become distinct pustules. The subjects of the pustular eruptions are, as a rule, ill-nourished or debilitated, either as the result of the infection or from other causes such as insufficient food, alcoholism, etc.

The acuminate or miliary pustular syphiloderm (Figs. 90 and 91) resembles in the size, shape and distribution of the lesions the miliary papular syphiloderm. It consists of pin-head- to millet-seed-sized conical or acuminate pustules situated about the hair-follicles. These begin as small red papules upon the summit of which a pustule or vesicopustule rapidly develops, the contents of which soon dry up into small brownish crusts which when they fall leave a pigmented spot or exceptionally a small scar. The eruption is rarely purely pustular,

FIG. 89.—Pustular syphiloderm. (Late secondary eruption.)

but along with the pustules are a variable number of scaly acuminate papules. It may appear quite acutely, covering a considerable portion of the skin within a day or two, or it may come out in crops extending over a period of ten days to two weeks. When it comes out rapidly and early in the second stage it is commonly accompanied by some elevation of temperature. It is situated chiefly on the face, particularly the forehead, scalp, back of the neck, over the shoulders, and on the arms and legs. Not uncommonly, especially in the relapsing forms,

Fig. 90.—Miliary pustular syphiloderm.

there is a more or less marked tendency to arrangement in well-defined patches or in rings and segments of circles.

It usually occurs within the first six months of the disease, but is infrequent as a very early eruption; it may be seen quite late. Its course is usually somewhat sluggish, lasting for some months. Instead of small pin-head-sized pustules the lesions may be as large as split peas, resembling those of acne, the large acuminate pustular or acneform syphiloderm. Occasionally this variety may exhibit a more or less close resemblance to variola, many of the pustules showing umbilication; indeed the resemblance at times is so close as to necessitate great care in the differential diagnosis (Fig. 92).

The small flat pustular syphiloderm, the impetiginous syphilid, syphilitic impetigo or pustulo-crustaceous syphilid occurs as pea-sized

flat pustules usually arranged in ill-defined patches or less frequently scattered about without any definite arrangement. The contents soon dry into rather thick brown crusts which may be discrete or, when the pustules are numerous and closely aggregated, may cover considerable areas through the coalescence of the lesions (Fig. 93). Beneath these crusts there is usually superficial ulceration. The eruption affects particularly the hairy regions, such as the scalp, the beard, and the pubes, but

Fig. 91.—Miliary pustular syphiloderm.

also occurs about the angles of the mouth, the alæ of the nose, upon the chin, less frequently on the extremities. The number of lesions varies considerably; when the eruption occurs early they are usually discrete and general, but when it occurs late or in debilitated subjects they are more numerous and form confluent patches. It is rarely an early eruption, but occurs in the late secondary or early tertiary period.

The large flat pustular syphiloderm or ecthymatous syphiloderm occurs in two forms, a superficial and a deep form. The former is the earlier eruption of the two and may appear at any time within the first

year, although it usually occurs six to eight months after the initial lesion. The pustules differ from those of the small flat variety chiefly in their larger size (Fig. 94). They are covered with thick crusts beneath which are superficial ulcerations or erosions, and are scattered over the scalp, the trunk and extremities, particularly the lower ones. Not infrequently they are associated with lesions of another type, such as papules or smaller pustules. The eruption may come out in a short time, or it may come out in successive crops over a period of some weeks; and the earlier it appears the more abundant the eruption is

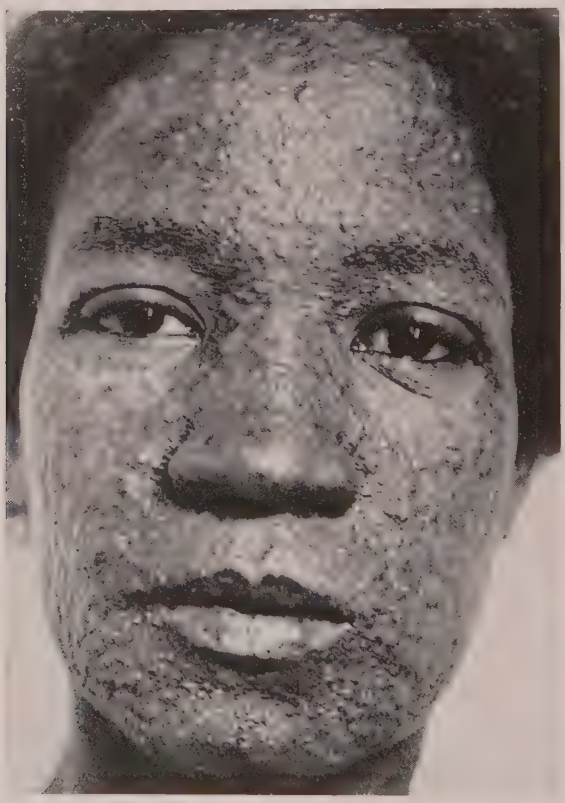


FIG. 92.—Varioliform syphiloderm.

likely to be. The greater number of pustules disappears without leaving any trace beyond a transient pigmentation, but a few scattered scars occasionally follow.

In the deep-seated variety the lesions may be pustules from the beginning, but more frequently they begin as flat papules or tubercles which are speedily transformed into large pea- to finger-nail-sized pustules whose contents soon dry into thick brown or greenish crusts beneath which are ulcers of variable depth. In a certain proportion of cases these crusts increase in thickness and circumference by the

addition of successive layers from beneath, each new layer being larger than the preceding one, owing to the peripheral extension of the underlying ulcer; and in this manner laminated oyster-shell-like crusts are produced covering sharp-cut, at times quite deep, ulcers. This variety of eruption is known as rupia. When the crusts fall the ulcers slowly heal by granulation, leaving a round or oval smooth scar which is more or less pigmented, especially about its borders, and this pigmentation may last for many months or even years.

The eruption is situated upon the shoulders, the back, and extremi-

Fig. 93.—Pustular syphiloderm.

ties, being most abundant in the last-named region on the legs. Its course is slow, continuing for many months or more than a year, new small crops of pustules appearing at intervals of a week or two for many months. It is a comparatively late manifestation, appearing about the end of the secondary stage or the beginning of the tertiary, although it may occur as early as the sixth month of the infection as a precocious symptom, when it is commonly much more destructive than when it appears at a later period. The patient usually shows symptoms of debility or is decidedly cachectic.

Diagnosis.—The several varieties of the pustular syphiloderm may at times be mistaken for acne, variola, impetigo, pustular eczema, and ecthyma.

The follicular pustules of syphilis are to be distinguished from those of acne by their much wider distribution and association with enlarged lymphatic glands and other evidences of general infection; the pustules of acne are in the vast majority of cases confined to the face and upper portion of the chest and back and are accompanied

FIG. 94.—Large papulo-pustular syphiloderm.

by comedones; the course of the syphilitic eruption is comparatively acute, while that of acne is decidedly chronic.

When the pustular syphiloderm is situated in the scalp or beard it may be mistaken for pustular eczema, but the latter is much more superficial, never produces ulceration, and is accompanied by itching and burning. The distinction between the varioliform syphiloderm and variola is at times made with difficulty. The eruption of the latter is preceded by a prodromal period with high temperature and severe

pain in the lumbar region, it begins as shot-like papules which become umbilicated vesicles and later pustules, and is remarkably uniform in character. The lesions of syphilis have no vesicular stage, are not uniformly umbilicated, and there are usually a variable number of small scaly papules mixed with the pustules. When the eruption occurs early the initial sclerosis is usually still present. It should be remembered that the syphilitic eruption may at times be accompanied by fever.

The impetiginous syphiloderm differs from impetigo in the greater number and wider distribution of the pustules, the absence of inflammatory symptoms, itching and burning, and its chronic course. The large pustular syphiloderm at times resembles ecthyma, but differs from that affection in the deeper ulceration which accompanies it and the pigmented round scars which frequently follow it. Ecthyma is seen usually in broken-down subjects, alcoholics, and almost always in those who are the subjects of some itching affection, often pediculosis corporis; it is for the most part limited to the lower extremities.

Pigmentary Syphilide.—Synonyms.—Syphiloderma pigmentosum; Syphilitic leukoderma.

Synonyms.—Syphiloderma pigmentosum; Syphilitic leukoderma.

In 1853 Hardy called attention to a peculiar pigmentation of the skin as a symptom of syphilis, occurring in the great majority of cases upon the sides and back of the neck. It appears under several forms, first as ill-defined yellowish-brown or cafe-au-lait round or oval spots varying in size from an eighth of an inch to an inch in diameter; as a well-defined band of diffuse pigmentation surrounding the neck, "the collar of Venus"; or as oval or round whitish patches surrounded by a reteform pigmentation, the last-named sometimes following the second form. As already remarked, its usual situation is the neck, although it may extend to the trunk, and in exceptional cases may cover the greater part of it. It is seen almost exclusively in women before the age of thirty; according to Maireau, it is rare after the twenty-fifth year. Most authors describe it as a very uncommon symptom, but Shillito found it in about seventy-five per cent. of fifty consecutive cases, and Maireau describes it as extremely common in young women. There is a good deal of uncertainty as to whether the pigmentation appears as a primary symptom or as the sequel of a preceding roseola. Shillito is quite convinced that in the majority of cases, if not invariably, the latter is the case. It is usually an early symptom occurring in the early months of the secondary stage, although it may appear late. It may disappear after two or three months, or it may last for several years, or even indefinitely, and is but little if at all influenced by antisyphilitic treatment.

Diagnosis.—It is to be distinguished from chloasma, vitiligo or leukoderma and from tinea versicolor.

Chloasma is situated, in most cases, upon the face, and is commonly associated with pregnancy or uterine disease; the white patches of

vitiligo are usually much better defined than those of syphilitic leukoderma and are seldom confined to the neck; in tinea versicolor, which rarely extends to the uncovered parts of the neck, the discoloration is on, not in, the skin, and the microsporon furfur is readily found in scrapings from the discolored patch.

Bullous Syphiloderm.—Synonyms.—Syphiloderma bullosum; Pemphigus syphiliticus.

Synonyms.—Syphiloderma bullosum; Pemphigus syphiliticus.

Although the bullous syphiloderm is not uncommon in congenital syphilis, it is among the very rare forms of eruption in the acquired disease. It occurs as pea- to nut-sized blebs usually surrounded by a narrow dull-red halo, with transparent contents which soon become cloudy or purulent. These, in a few days, dry into brown or greenish crusts, which at times assume a rupial character, beneath which there is usually superficial ulceration. The blebs are discrete, rarely numerous, and are scattered over the extremities, often, like the congenital variety, upon the palms and soles, and less frequently upon the face and trunk. Other types of eruptive lesion are usually associated with the blebs as well as other symptoms of syphilis. In rare instances bullæ have been observed upon the buccal mucous membrane, as in the cases reported by Fox and by Vörner. The eruption usually occurs in the latter part of the secondary or in the early tertiary stage, and pursues a somewhat indefinite course, lasting from some months to a year or two in exceptional cases. It is commonly regarded as indicative of a severe infection.

Diagnosis.—The only affection for which it is at all likely to be mistaken is pemphigus, to which it at times bears considerable resemblance; indeed, the blebs frequently do not differ in any particular from those of pemphigus. The presence of other lesions and symptoms of syphilis and the occurrence of ulceration, with the occasional formation of rupial crusts, are features of the syphilitic eruption which usually serve to make the differential diagnosis one of no great difficulty.

Moist Papules.—Synonyms.—Flat condyloma (Fig. 95); Mucous patches; Fr., Plaques muqueuses; Ger., Schleimhaut papeln.

When syphilitic papules are situated in regions where the skin is constantly warm and moist and subjected to friction, or upon mucous membranes, they are more or less modified in their appearance, differing from the lesions found in other regions. In regions where there are opposed skin surfaces, such as the inner surface of the upper thigh, the scrotum, the vulva, between the buttocks around the anus, less commonly beneath the pendent breasts of women, and occasionally between the toes and fingers, the papules soon become grayish or yellowish-white through maceration of the epidermis and secrete a mucopurulent foul-smelling discharge. Not infrequently, especially in those who are not cleanly, they undergo hypertrophy, become de-

cidedly elevated with a papillomatous surface, forming the lesion known as the flat condyloma. Sometimes this hypertrophy is excessive, giving rise to large cauliflower-like masses of vegetations covered with an extremely offensive secretion (vegetating or papillomatous syphiloderm).

The mucous patch, which is a form of moist papule, occurs upon the mucous membranes of the lips, tongue, cheeks, the hard and soft palate, the tonsils, inner surface of the labia, and the anus, as roundish,

FIG. 95.—Flat condylomata.

oval or irregular, quite flat, very slightly elevated grayish patches from the size of a pea to the little finger-nail, which look as if lightly painted with silver nitrate. At times they are eroded or superficially ulcerated, when they may be quite sensitive, making the taking of hot drinks, or highly seasoned food painful when situated in the mouth.

Both moist papules and mucous patches are very common lesions in the secondary stage of syphilis, and may be found in the majority of cases, the former particularly around the anus and vulva, the latter on the mucous membrane of the lower lip and tongue. Owing to their

peculiar and usually well-defined features, they are of considerable value in diagnosis. While usually quite amenable to treatment, the mucous patch may recur with great persistency in the mouths of smokers.

At the corners of the mouth, fissured moist papules are common: these are highly characteristic lesions not to be mistaken for any other affection.

Mucous patches when ulcerated may be mistaken for aphthous ulcers, but the latter are distinctly vesicular when they first appear, are very painful, and run a very acute course, while the former are persistent lesions, often lasting for months.

LATE OR TERTIARY SYPHILODERMATA

The late cutaneous lesions of syphilis or the tertiary syphilodermata, as already observed, are distinguished from the early or sec-

FIG. 96.—Nodular syphiloderm

ondary eruptions by the comparatively small number of the lesions, their asymmetrical distribution, their tendency to ulceration and their extremely chronic course. There are several distinct varieties of lesion present in the tertiary stage, although fewer than those of the early period. The late syphilodermata are: the nodular or tubercular syphiloderm; the gumma; and the papulosquamous syphiloderm, limited to the palms and soles.

Nodular Syphiloderm.—Synonyms.—Tubercular syphiloderm; Syphiloderma tuberculosum.

FIG. 97.—Ulcerating nodular syphiloderm. Distribution resembling a thoracic zoster.

The nodular syphiloderm is characterized by patches of dull-red or brownish-red elevations varying in size from that of a small to a large pea, with a smooth or slightly scaly surface usually aggregated in variously sized patches or groups either without definite arrangement or, what is common, arranged in circles or segments of circles. Although such patches may be annular from the beginning, they also frequently arise through the absorption of the centrally situated lesions, while new nodules are added to the circumference. The nodules may undergo absorption after a month or two, leaving pigmented

atrophy of the skin, or they may ulcerate, forming patches made up of a number of small round punched-out ulcers covered with crusts. These ulcerating patches are often crescentic or reniform in shape, advancing on the convex border and healing on the concave side, or they may form extensive serpiginous figures which ulcerate and crust over, and frequently involve large areas (Fig. 96) in the course of months or years, producing extreme destruction of the skin followed by scarring of a characteristic kind. The number of patches is usually a very limited one; often there is but a single one, although there may be several. The nodular syphiloderm is usually seen two or three years after infection, although quite exceptionally it occurs in the late secondary period, when the lesions are likely to be much more numerous than the later eruption, although never generalized and symmetrical. It very commonly occurs ten years or more after the initial lesion (Figs. 97, 98, and 99).

Fig. 98.—Nodular syphiloderm.

Although it may occur on any portion of the skin, it is most frequently seen in the face, especially on the forehead, the nose, on the trunk, usually the posterior surface, and on the extensor surface of the extremities.

The course is a chronic one, the patches slowly extending and lasting for years unless removed by treatment. Usually there are no very marked subjective symptoms. Even when extensive ulceration occurs, there is little or no pain, but exceptionally there may be severe pain when the ulcers are situated about the joints, such as the ankle, where they are subjected to frequent movement.

Diagnosis.—The nodular syphiloderm is usually recognized without difficulty, the only affection for which it is at all likely to be mistaken being lupus vulgaris. The former is almost always a disease of adults, the latter begins as a rule in childhood; the former frequently shows an annular or crescentic arrangement, the latter very infrequently does so; the syphilitic affection pursues a much more rapid course than lupus, producing as much ulceration in a few months as the latter does in as many years; and, lastly, when recurrence takes place in old areas, in lupus new nodules frequently appear in the midst of the cicatrices, whereas the nodules of syphilis are never or seldom found in, but at, the margin of the scars.

Squamous Palmar and Plantar Syphiloderm (Plate XVII).—Reference has already been made to the scaly papular eruption of the palms and soles which forms part of a general eruption in the secondary

FIG. 99.—Nodular syphiloderm (late). The case had been mistaken for lupus, which it resembled very much. Recovered promptly under specific treatment.

FIG. 100.—Circinate squamous syphiloderm (late).

period. There is also a scaly syphiloderm of the palm and soles which is a common and characteristic eruption of the late or tertiary stage. It differs from the papulo-squamous eruption of the secondary period by its asymmetrical distribution—it affects a single palm or sole, occasionally both a palm and sole, but rarely, if ever, both palms and soles. It occurs under two forms. The first is distinguished by sharply defined, scaly patches with slightly elevated borders made up of pinkish, red, or yellowish hemp-seed-sized, flat, confluent nodules covered with thin adherent scales. Quite often the patches are perfectly annular (Fig. 100), varying in diameter from that of a large pea to a dime, and may be present in considerable numbers, or by the junction of two or more, they may form a patch of considerable size with polycyclic or

FIG. 101.—Squamous syphiloderm (late).

serpiginous borders. For a time after their appearance they slowly extend, but when fully developed they are apt to remain stationary for months. In a certain proportion of cases there is more or less pronounced hyperkeratosis with fissuring in the normal furrows. Upon the soles this hyperkeratosis may be extreme, forming a thick horny plate with fissures extending deeply into the corium which make walking very painful.

A second form occurs as pea- to finger-nail-sized or larger map-like round or oval pinkish or red, slightly desquamating patches surrounded by a narrow collar of horny epidermis, with its turned up edge toward the centre of the patch (Fig. 101).

The course of this form of syphiloderm is usually extremely chronic; when once established it may last for many months, and not uncom-

PLATE XVIII

Ulcerating syphilitic gummata.

monly for years, without undergoing any very marked change in its appearance. It is one of the most rebellious of all the forms of cutaneous syphilis, demanding for its successful treatment vigorous internal and external measures, and is extremely prone to recur.

Diagnosis.—The squamous palmar syphiloderm is to be distinguished from squamous eczema and psoriasis. It differs from the first by the absence of itching, the sharp circumscription of the patches and their often annular or circinate shape.

Psoriasis is quite uncommon on the palms and soles and is never confined to them, but is always accompanied by characteristic patches elsewhere, particularly the scalp, elbows and knees. The scale is characteristically laminated, quite unlike the scale of the syphiloderm.

The **gummatous syphiloderm** or **gumma** (Plate XVIII) is usually a manifestation of the late or tertiary stage of syphilis, but may occur in the late secondary stage or even, very exceptionally, in the early secondary stage, when it is usually to be regarded as a symptom of so-called precocious syphilis.

It begins as a small, firm subcutaneous nodule which, as it enlarges, becomes adherent to the overlying skin which, at first of normal color, becomes red and slightly elevated. It grows rather rapidly and in the course of a month or six weeks may reach the size of an English walnut or a small egg. The skin becomes stretched, bluish in color, and finally gives way, a viscid bloody fluid escaping through the opening. Within a short time a sharp-cut "punched-out" ulcer is formed which is usually of considerable depth, sometimes extending down to the subcutaneous tissue; this ulcer may continue for months or a year or two, unless healed by appropriate treatment, slowly extending in depth and circumference.

Instead of a circumscribed nodule there may be a diffuse infiltration of the subcutaneous tissue and skin, forming a firm, rather ill-defined dusky-red or bluish plaque of variable size in which after some weeks or a month or two several round openings appear (Fig. 102) from which a viscid fluid is discharged. These openings may remain as discrete ulcers, or several of them may unite to form a serpiginous ulceration of considerable extent, or the whole plaque may eventually break down to form one large ulcer with irregular or polycyclic margins. While the usual course of the gumma is to soften and ulcerate, it may, after a time, disappear by absorption without ulceration. When extensive gummatous infiltration and ulceration occur upon the legs or the female genitalia, the lymphatic circulation may be greatly interfered with and a condition of fibrous thickening with papillomatous growth may arise resembling elephantiasis.

The most frequent site of the gumma is the legs, particularly the outer side of the calf, but it may occur on any portion of the body. Upon the buttocks and thighs, regions in which there is an abundance of subcutaneous tissue, it is often extensive and deep. Over flat bony surfaces, such as the sternum, the forehead and scalp, where there is

little subcutaneous tissue, it frequently involves the periosteum and is followed by necrosis of the bone.

When it occurs in the late or tertiary stage it is usually a solitary lesion, although several are not at all uncommon. Gumma of the earlier stages is much more apt to be multiple and when there are a number they are usually smaller than when there is but a single lesion

It is usually without pain in its earlier stages, or if pain is present it is rarely pronounced, but when ulceration has occurred there may

FIG. 102.—Multiple ulcerating syphilitic gummata. Rapid recovery under specific treatment.

be decided pain, especially when it is situated in the neighborhood of a joint where it is subjected to frequent movement.

Diagnosis.—In the ulcerative stage the recognition of the syphilitic gumma usually presents but little difficulty; its circular shape and "punched-out" appearance, its situation on the calf in many cases, or over flat bony surfaces, the absence of pain or its comparatively mild character when present, and the scars of old syphilitic ulceration often to be found if looked for, are quite distinctive. The case is otherwise, however, before ulceration has taken place, and the diagnosis may then present considerable difficulty. It may be mistaken

for various forms of new-growth, benign or malignant, such as fibroma, lipoma, sarcoma, or the tuberculous gumma. From the new-growths it differs by its comparatively rapid growth, by the early appearance of ulceration, by its situation on the legs, a region seldom attacked by new-growths; from the tuberculous gumma, which occurs upon the calf, in young women most frequently, the erythema induratum of Bazin; it differs also by the much earlier appearance of ulceration and by the circular shape of the ulcers, quite unlike the irregularly-shaped ulcers with undermined borders which occur in the tuberculous affection.

When there is the slightest uncertainty in the differential diagnosis between an ulcerating gumma and the ulcer which results from malignant disease, it is wise to give the patient the benefit of a short course of specific treatment before subjecting him to a serious and mutilating operation. The author has known this precaution to serve a most useful purpose in more than one instance. The Wassermann reaction may be absent in late syphilis, and its presence only proves that the patient is a syphilitic subject and not that the ulcer is of necessity syphilitic.

Congenital Syphilis (*Syphilis Cutanea Congenita*).—The eruptions of infantile, congenital or inherited syphilis present much the same features as those of the acquired or adult form, but they also present certain peculiarities in symptoms and course which distinguish them somewhat from the latter. They are not preceded by an initial lesion and their development is not marked by the more or less orderly stages which characterize the development of acquired syphilis. The type of eruption is more or less influenced by a number of factors, important among which is the period at which infection has taken place, *i.e.*, whether it has occurred at the moment of conception or at an early or late period of the pregnancy. The later in the pregnancy the infection takes place, the more nearly the eruptions approach in type those of acquired syphilis. The character of the eruptions is also influenced to a considerable degree by certain anatomical and physiological peculiarities of the infant skin. They are usually decidedly more hyperæmic and less infiltrated than those of the adult. The profound prejudicial influence which the infection exerts upon the development of the entire infant organism and the frequent concomitant occurrence of grave visceral disease, due also to the infection, must exercise a considerable effect upon the cutaneous symptoms.

The most frequent type of eruption is the erythematous or macular which appears about the third week after birth, but may appear in the first week or as late as the sixth or eighth week. It is distinguished by red patches, varying in size from that of a pea to a finger-nail, which soon assume a brownish-red hue and do not wholly disappear under pressure, owing to the presence of slight pigmentation. Occasionally there is a slight degree of infiltration producing some elevation, maculo-

papules, and the papules may at times show a slight scale upon exposed parts. The eruption shows a certain predilection for the abdomen, buttocks, genitalia, and inner surface of the thighs, but may occur on the trunk, forearms, especially upon the palms and soles, and in the face about the alæ of the nose and around the mouth. A frequent and characteristic symptom is a coryza which interferes with breathing through the nose and consequently with nursing, producing the well-known "snuffles." There is commonly more or less hoarseness, or complete aphonia. Occasionally the eruption is so slight and disappears so rapidly that it attracts but little attention, or may escape notice altogether, but in most cases it is quite abundant, lasts for a number of weeks, and may continue for a longer period by the appearance of new lesions from time to time.

A papular eruption also occurs in infantile syphilis which resembles the papular syphiloderm of acquired syphilis, but the papules are usually much less infiltrated than in the adult and less inclined to scale. It is situated upon the cheeks, the forehead, and the nates principally. About the anus, on the scrotum and thighs, and about the mouth, it occurs as moist papules or flat condylomata, which frequently ulcerate, sometimes quite deeply, and when numerous, extensive destruction may result. About the angles of the mouth they are frequently accompanied by fissures.

Many years ago Taylor described a characteristic symptom of congenital syphilis to which attention has been more recently called by Meyer and Hochsinger. This is a diffuse infiltration occurring upon the palms and soles and buttocks, which Taylor attributed to the fusion of numerous papules. The palms and soles are a dull red color, thickened and somewhat scaly. It appears most frequently in the fourth week after birth, reaches its acme in the second or third month, and then slowly disappears. Mracek does not regard it as related to papules in any way but as following an erythema.

A vesicular eruption also occurs, but is extremely rare, and is almost always asociated with pustular and bullous lesions.

The pustular eruption does not differ in any essential particular, neither as to the character of the pustules nor their distribution from the pustular syphiloderm of acquired syphilis; it is less frequent than the macular and papular eruptions and usually occurs in infants whose nutrition is profoundly affected by the infection. While it usually disappears without leaving any permanent alteration, it may be followed by considerable scarring.

The nodular or tubercular syphiloderm and the gumma are rarely seen in infants, but may occur at a later period as symptoms of inherited syphilis; they do not differ from the lesions of the acquired form.

In a certain proportion of cases the syphilitic infant is born with an eruption which consists of pea- to nut-sized blebs situated in most instances upon the palms and soles, the so-called syphilitic pemphigus. According to Mracek's statistics, fully one-half of all prematurely born

syphilitic infants are thus affected. The contents of the blebs, at first turbid serum, soon become purulent, the blebs rupture, leaving an excoriated surface which frequently becomes the seat of an ulcer. The nails are frequently affected; the matrix inflames and ulcerates, the nails become brown, loose, and drop off. Although occurring most frequently upon the palmar and plantar surfaces, the eruption may also occur upon the trunk and limbs. The infants are profoundly marasmic; the skin is pale, yellowish, flabby and wrinkled, the face is that of an old man or woman, the nose is blocked up with crusts and the cry is hoarse or there is complete aphonia. In the great majority of cases death occurs in the course of a week or two, or earlier.

Symptoms.—The features of the several eruptions which have already been described; the early age at which they appear, usually within the first six weeks, seldom later than the third month; the marasmic appearance of the infant—the yellow, withered, flabby skin and weazened features, like that of old age; the nasal obstruction; the hoarse cry or aphonia, the presence of moist papules about the anus and rhagades at the corners of the mouth all combine to present a picture which is readily recognized and once seen is not soon forgotten.

In older children the cutaneous symptoms are frequently accompanied by symptoms referable to other tissues, such as dactylitis, a gummatous inflammation of one or more of the phalanges producing a spindle-shaped swelling of one or more fingers, keratitis, and the peculiar notched condition of the permanent central incisors—Hutchinson's teeth; these are frequently valuable corroborative symptoms.

Etiology.—In the vast majority of cases syphilis is acquired in sexual intercourse, but infection frequently occurs in other ways. Owing to the frequent occurrence of lesions in the mouth, which are highly contagious, it may be transmitted by kissing, by bites, *e.g,* the nursling frequently infects the wet-nurse. It may be transmitted indirectly by a great number of objects in daily use which have been used by infected individuals. Drinking-glasses, and other table utensils, toilet articles, tobacco-pipes, the mouth-pieces of musical wind-instruments, surgical and dental instruments, may all be the media of infection (syphilis of the innocent, *syphilis insontium*). The obstetrician and the midwife occasionally acquire it in the performance of their duties, the initial lesion being situated in most instances upon the finger, but occasionally upon other parts of the hand. Both sexes are alike susceptible, and no age is exempt. It is highly contagious in the primary and secondary stages, but only slightly so in the tertiary stage.

It is frequently congenital, infection taking place through the placenta from the mother and only indirectly through the father; opinions vary, however, on this point.

The direct cause is a motile spiral microörganism shaped like a corkscrew, the *spirochæta pallida* or *treponema pallidum,* discovered by Schaudinn and Hoffmann in 1905. It is from five to fifteen microns long and has from three to ten or more spirals. It is present in the

initial lesion, in the eruptive lesions of the secondary stage usually in great numbers, and in small numbers in the lesions of the tertiary stage, in the lymphatic glands and in great numbers in the viscera in congenital syphilis, being especially abundant in the liver. Its causal relationship to the malady has been demonstrated by the production of characteristic lesions in the monkey and chimpanzee by the inoculation of pure cultures, and it has been successfully cultivated by Noguchi. It may be demonstrated in smears or scrapings from the initial lesion or from mucous patches, moist papules and papules upon the skin, by dark-ground illumination, or very readily by the India ink method of Burri. The author has found that the India ink may be very satisfactorily replaced by nigrosine, as suggested by Goosman.

Pathology.—Syphilis is an infection, a spirillosis, due to the spirochæta pallida (treponema pallidum), and the lesions which distinguish it belong to the infectious granulomata. The histological changes which characterize it are, with the exception of a number of comparatively unimportant details, practically the same in all forms of eruption.

In the erythematous (macular) syphiloderm the changes are slight; there is some dilatation of the vessels of the superficial plexus, chiefly in the papillary body, beginning endothelial proliferation and a slight increase of cells about the vessels, the follicles and the sweat-glands.

In the papule, which may be taken as the histological type of the syphilitic lesion, there is at first a very abundant perivascular leucocytic exudation which is soon replaced by a dense infiltration of plasma cells (Fig. 103) in the papillary body and the subpapillary portion of the corium. Occasional giant-cells are also present, in many of which the peripheral ring of nuclei is incomplete, a feature which distinguishes them from the giant-cells of the tuberculous granuloma (Unna). Occasionally there are also a varying quantity of red blood-cells scattered throughout the mass of plasma cells. In the region occupied by the exudate the elastic tissue has in large part or completely disappeared. The epidermis is at first but little altered, but later there is inter- and intracellular œdema of the rete, with numerous migratory leucocytes in the intercellular spaces, and in places small collections of polynuclear leucocytes, especially beneath the horny layer, which at times unite to form small pustules (papulo-pustular syphiloderm).

The miliary papular syphiloderm differs from the larger papular syphiloderm chiefly by its situation about the follicles, the greater number of giant-cells in the exudate and a more pronounced tendency to superficial destruction (Ehrmann); it is, in fact, a syphilitic folliculitis and perifolliculitis.

In the syphilitic condyloma (flat condyloma), in addition to the plasma-cell exudate in the papillary and subpapillary portion of the corium, there is an enormous increase in the length and breadth, especially the former, of the papillæ and a corresponding increase in the size of the interpapillary prolongations of the rete. In the latter there is an abundant immigration of leucocytes which may at times lead to

the destruction of the rete, which is then cast off as a crust, leaving a raw, easily bleeding surface.

According to Unna, the lesions of the tertiary stage are nothing more than "the rejuvenated remains of old syphilitic products of the secondary, or even primary period," a view which was also held by Hutchinson.

The nodular (tubercular) syphiloderm is histologically much like the syphilitic papule. It is made up of plasma cells and young connective-tissue cells with dilated blood-vessels and lymph-spaces.

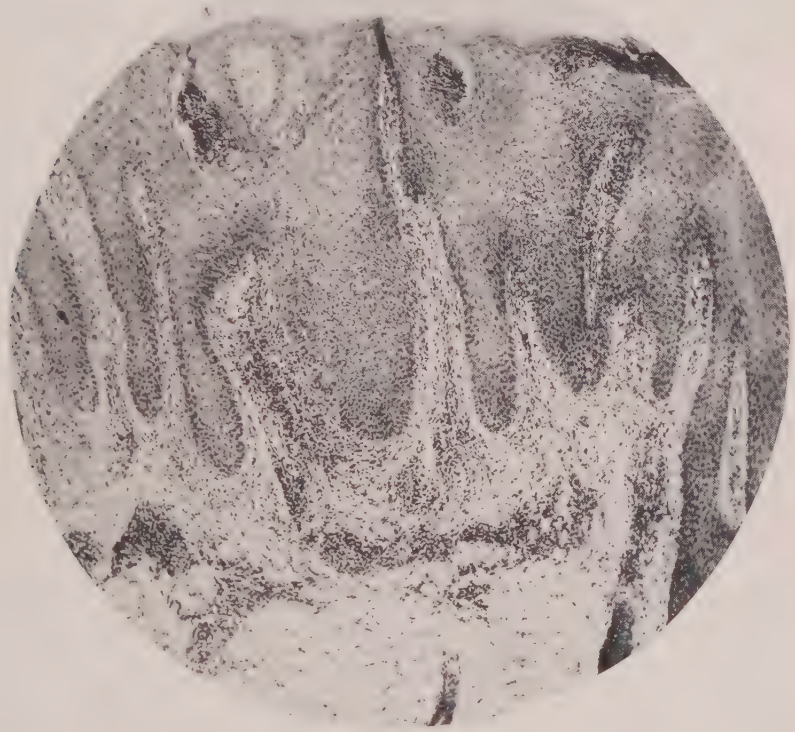


Fig. 103.—Vegetating syphilitic papule. Greatly elongated interpapillary rete processes; plasma-cell exudate in papillary and subpapillary portion of corium.

The gumma differs considerably in its structure from the other syphilodermata. It is surrounded by a capsule of connective tissue, next to which is an inflammatory exudate composed of leucocytes and plasma-cells while the centre is granulation tissue in which are large connective-tissue cells and a few giant-cells, much fewer in number than in the lesions of the secondary stage. The centre may undergo caseation, or be transformed into cicatricial connective tissue. When it involves the epidermis, the latter is invaded by leucocytes and eventually gives way, permitting the discharge of the softened contents of the centre of the gumma.

Diagnosis.—As the diagnosis of the various syphilodermata has already been discussed in the sections devoted to their consideration, we shall confine ourselves here to an account of those symptoms which, common to the whole group of syphilitic eruptions, are to be considered in the diagnosis of cutaneous syphilis considered as a whole.

The eruptions of the secondary stage are almost without exception more or less general in their distribution and symmetrical in their arrangement. While they may occur on any part of the skin, they manifest a partiality for certain regions, such as the border of the scalp on the forehead (the so-called corona veneris), about the alæ of the nose, around the mouth, the flexor surfaces of the forearms and the palms of the hands. Their color is somewhat distinctive—although often a bright red when they first appear, they soon assume a brownish-red hue, the so-called "coppercolor" or "ham-color," but too much stress should not be laid upon this symptom, since it is frequently absent or so little marked as to be of no account. A much more valuable diagnostic feature is polymorphism, which is rarely absent, and is often quite marked. With every macular eruption there is pretty sure to be a certain number of papules, and in every papular eruption scattered pustules are present. This polymorphism is due to the fact that the eruptions usually come out in crops and the lesions undergo further development after their appearance, so that various stages are present simultaneously. A negative symptom of some value is the complete absence in many cases of subjective symptoms, or their trivial character when present; syphilitic eruptions rarely itch, but there are exceptions to this rule. In negroes itching is often present to a considerable degree, so much so that they often refer to their disease as an "itch."

Symptoms on the part of the mucous membranes, of the eye, and of the lymphatic glands are frequently associated with the eruptions and are of very great value in corroborating the diagnosis. Lesions of the mucous membranes of the mouth and pharynx are often present. Sore throat, at times accompanied by hoarseness, is very often complained of in the early eruptive stage, and mucous patches are frequent at the corners of the mouth, on the inner surface of the lips, the cheeks, the tongue, tonsils, and the mucous surface of the labia. Moist papules, flat condylomata, are common about the anus, on the scrotum, the vulva and inner surface of the thighs.

Iritis is a frequent occurrence in the early secondary stage.

In the great majority of cases a more or less general adenopathy is present during the secondary eruptions, most readily perceived in the post-cervical, epitrochlear and inguinal glands. Too much importance should not be attached to this symptom, however, since it is by no means confined to syphilis, but is present in some of the acute exanthemata.

It should be kept in mind that in a considerable proportion, if not in the majority, of cases the early eruptions are preceded and accompanied by fever, the elevation of temperature being at times consider-

able. The author has known cases of this kind to be mistaken for typhoid fever.

In 1901 Bordet found that when the blood of one animal was injected into another of a different species, as the blood of a rabbit into a guinea-pig, the serum of the second animal acquired the power to dissolve the blood-corpuscles of the first, and that this hemolytic property was due to the presence of two substances, "amboceptor" and "complement," in the serum of the injected animal. It was also found that certain substances known as "antibodies" are present in the blood of those suffering from various infections, which under certain conditions (addition of an "antigen") may fix the complement and prevent hemolysis. Wassermann, Neisser and Bruck, utilizing these discoveries, devised a method of serum diagnosis since known as the Wassermann reaction, complement-fixation test, which has proven to be of the greatest value, not only as a diagnostic method, but as a method of controlling the results of treatment. Although it has been variously modified by a number of serologists, notably by Noguchi, making it more delicate and accurate and less complicated, it nevertheless requires considerable technical training and skill for its proper performance, and should, therefore, always be entrusted to the laboratory-worker. Unless skilfully done, it is not only wholly unreliable, but what it worse it is likely to be misleading. The reader who desires details as to its performance is referred to the manuals of pathology.

It is to be employed in all cases in which the diagnosis is the least in doubt, but it should also be borne in mind that it has its limitations. It does not appear until the end of the first week after the appearance of the initial lesion, and usually appears later, as late as the end of the fourth week; it is not invariably present even in the secondary stage, being absent in about ten per cent. and is absent in a still larger per cent. of cases in the tertiary stage. It may be absent in alcoholics and after the inhalation of ether. It is present in other diseases besides syphilis, such as leprosy, yaws, malaria, and scarlet fever. It should always be kept in mind that a positive reaction means nothing more than that the individual is syphilitic; it is by no means definite proof, but only presumptive evidence, that his cutaneous affection is syphilis.

Another procedure of considerable diagnostic value, particularly in the teritary stage, is the intradermic injection of "luetin" the name given by Noguchi to a suspension or extract of killed pure cultures of the spirochætæ. A positive result is indicated by the appearance of a red papule at the site of the injection at the end of from twenty-four to thirty-six hours. Occasionally after two or three days a pustule takes the place of the papule and in rare cases the reaction may be delayed for a week or more. As the reaction is frequently negative in the secondary stage, it is much less valuable than the Wassermann reaction, but it is usually present in the tertiary stage. Sherrick has very recently announced that a positive reaction may be obtained in ninety-nine per cent. of all cases, syphilitic or otherwise, in which iodide of

potassium or other preparations of iodine are being administered. If subsequent observations should prove the correctness of this statement, it should be remembered as a possible source of error.

Prognosis.—The prognosis of the early syphilodermata is, upon the whole, very favorable, most of them disappearing after some weeks or a month or two spontaneously, and their disappearance is greatly accelerated by judicious treatment. The early erythematous or macular eruption is often an insignificant one, at times so slight as to give the patient but little concern or even escaping his notice altogether. Exceptionally the disease may apparently come to an end with this eruption; cases occur in which it is the first and only symptom of infection.

The pustular eruptions, especially those of the later secondary period, are apt to be more persistent, and the larger lesions are frequently followed by permanent scarring.

Mucous patches in the mouth are frequently most annoying lesions, resisting treatment and recurring with extraordinary persistency, particularly in smokers. Moist papules about the anus and genitalia of both sexes are often persistent, especially in the uncleanly, and in alcoholics or those debilitated by unhygienic living. Ulceration may occur causing considerable pain and destruction of tissue.

In rare cases the symptoms are unusually severe from the beginning, or shortly after the appearance of the early eruption (malignant syphilis, syphilis præcox). Pustular and ulcerative lesions appear in the early secondary stage, unusually rebellious to treatment, the patient becoming profoundly cachectic, and death may follow in the severest cases.

The tertiary lesions, such as the nodular (tubercular) and gummatous syphilodermata, are chronic affections and, unlike the secondary eruptions, show little or no tendency to spontaneous healing, but may last for many months or years when untreated; they usually respond readily, however, to judicious treatment. The scaly palmar syphiloderm of the late stage is an exception; it is one of the most rebellious of all the syphilodermata, often yielding only to intensive internal and external treatment.

The prognosis in congenital syphilis is far more serious than in the acquired form. In infants born with bullous lesions, the so-called syphilitic pemphigus, and in those with pronounced malnutrition, death within the first month or two after birth is common, although recovery may last for many months or years when untreated; they usually re-

One of the most important factors influencing the prognosis is the character of the treatment employed in the early stages of the infection. If it has been begun early and has been carried out vigorously and methodically, a permanent cure may be confidently anticipated, but if, on the contrary, it has been begun late and has been conducted irregularly, relapses and the occurrence of tertiary lesions may be looked for in a very large proportion of cases.

Treatment.—The treatment of cutaneous syphilis is practically the

treatment of syphilis in general; the symptoms of the early stages, of the first or second years, are largely and often entirely confined to the skin.

The subject of active syphilis should pay the strictest attention to personal hygiene, and when ulcerative lesions are present, the utmost cleanliness should be observed; and this is especially necessary in the case of infantile syphilis in which the eruptions are apt to be on the buttocks, around the genitalia and anus and about the mouth. The diet should be a generous one and in the case of infants especial attention should be given to the patient's nutrition, which is usually much impaired. In adults the use of alcohol should be forbidden, or if the patient has been accustomed to its daily use the quantity should be greatly restricted. When mucous patches are present in the mouth the use of tobacco in every form should be strictly forbidden, especially smoking, which always exerts a most injurious effect upon such lesions. In anæmic subjects, especially those with extensive ulcerative lesions, some easily assimilable form of iron, such as the potassio-tartrate, should be given. Codliver oil, if easily digested, may also be given with advantage when there are evidences of defective nutrition.

The patient, if an adult, should always be informed of the infectious nature of his disease and the possibility of infecting those about him and should be urged to take every precaution in the use of toilet articles and table utensils to avoid such an unfortunate occurrence. The attendants of syphilitic infants should be similarly instructed.

The medicinal treatment consists in the internal administration of mercury and its salts, certain synthetic compounds or arsenic, the most important of which is salvarsan, arsenobenzol, or dioxydiaminoarsenobenzol, and the iodides of potassium and sodium. These exercise a specific effect upon the infection, causing the disappearance of the spirochætæ, or inhibiting their activity, and bringing about the disappearance of the lesions characteristic of the malady.

Mercury is the oldest of these remedies, and until the introduction of salvarsan was undoubtedly the most efficacious of all the drugs used in the treatment of syphilis. It is used in many forms: as metallic mercury in mercurial ointment (unguentum hydrargyrum), in gray oil (oleum cinereum), in mercury-with-chalk (hydrargyrum cum creta); as salts of the metal, such as the mild chloride (calomel), the bichloride, the protiodide, the biniodide, the salicylate, and many others. As the therapeutic effect of these does not differ materially, if at all, the choice of the particular form will depend upon convenience of administration, certainty of effect, individual susceptibility, age and other factors of a similar kind.

For oral administration the protiodide is a favorite salt with many; it should be given in doses of one-quarter to one-half grain (0.016 to 0.03) three times a day. It is apt to produce more or less abdominal pain and diarrhœa in many individuals, even when given in moderate doses; this may be obviated to some degree by the simultaneous ad-

ministration of small doses of opium, but this is often inadvisable. The author much prefers the mercury-with-chalk (hydrargyrum cum creta) or gray powder, which should be given in doses of one to two grains (0.065 to 0.13) three times a day. It is much less apt to produce intestinal disturbances than the protiodide and is just as effective. It is especially to be preferred in the oral treatment of infantile syphilis.

One of the most efficient ways of using mercury is by inunction. The method is objectionable because it is dirty, time-consuming, frequently produces a severe dermatitis necessitating the suspension of the treatment and cannot be used as a rule without betraying its use.

After a warm bath and thorough drying of the skin one dram (4.0) of mercurial ointment is rubbed into the region selected for twenty minutes by the clock, no less, and occasionally longer when the ointment is not readily taken up. The parts selected for the inunctions are commonly the inner surface of the thighs, the calves, the abdomen, the sides of the thorax, and the flexor surface of the arms and forearms. Each of these is used in regular succession in such a manner that no one region is rubbed oftener than once a week; in this manner the production of a dermatitis may usually be avoided. The morning following the inunction, a warm bath may be taken to remove the ointment which still remains upon the skin. The inunctions should be made daily until from thirty to forty have been taken, when they should be suspended for a time. At Aix la Chapelle (Aachen), where the inunction treatment has been very thoroughly elaborated, the first course lasts six weeks; a second is given at the end of a year, lasting one month.

In infantile syphilis treatment by inunction is much to be preferred to all other methods. One dram (4.0) of equal parts of mercurial ointment and lanolin should be gently rubbed into the abdomen or, what is quite effective, spread upon the abdominal binder, daily.

One of the most efficient, if not the most efficient method of administering mercurial treatment, is the intramuscular injection of metallic mercury as gray oil (oleum cinereum), or the salicylate, or some one of the soluble salts. Of the soluble salts the bichloride is the most frequently used; it is dissolved in sterile normal saline solution and given in doses of one-quarter to one-half grain (0.016 to 0.05) three times a week, the injections being most conveniently made in the gluteal region.

The insoluble preparations, however, are to be preferred to the soluble salts; their effect is a more continuous one and the injections need not be given so frequently. Those most frequently used are calomel, metallic mercury and the salicylate of mercury; these are suspensions in some sterile bland oil, such as oil of sesame, oil of sweet almond or fluid petrolatum. Calomel is seldom used at the present time owing to the pain which follows its injection; metallic mercury, as gray oil (oleum cinereum), and the salicylate are the preparations most frequently employed. These may be conveniently obtained already pre-

pared in sterile ampoules, each of which contains one dose. The equivalent of one grain (0.065) of mercury or from one-half to one grain (0.03 to 0.065) of the salicylate should be given at each injection and the injections should be made once a week. The best site for the injections is the gluteal muscles, although any region in which there is a thick mass of muscles may be used; they should be made directly and deeply into the muscles, with the strict observance of asepsis. A glass syringe, so constructed that all parts of it may be thoroughly sterilized, should be used.

Mercurial fumigation is seldom used at the present time, although there is no doubt about its value in the treatment of syphilis, especially in the ulcerative forms. The patient is placed in a bath cabinet with the head outside, seated upon a cane-seated chair beneath which is a small stand with a receptacle in which is placed twenty to thirty grains (1.30 to 2.0) of calomel, which is vaporized by a small alcohol lamp.

During the carrying out of every form of mercurial treatment special attention should be paid to the condition of the mouth; the toothbrush should be used frequently in conjunction with some mild antiseptic mouth-wash, or a saturated solution of potassium chlorate. If signs of ptyalism appear (and ptyalism sometimes appears very suddenly during inunctions or intramuscular injections), the treatment should be suspended until they have disappeared.

The presence of nephritis is a contra-indication to every form of mercurial treatment, and particularly to the more intensive forms, such as inunction and intramuscular injection.

In 1910 Ehrlich announced the discovery of a new arsenical compound, arsenobenzol, salvarsan (dioxydiaminoarsenobenzol) possessing remarkable spirillicide properties with which he hoped to be able to destroy all the spirochætæ at one stroke and thus bring the infection to an abrupt end. The hope that it might be possible to cure syphilis with one dose was not realized, unhappily, but the drug has been proved to have extraordinary value in the treatment of that malady. It occurs as a yellow powder containing a large proportion (thirty-four per cent.) of arsenic which readily oxidizes on exposure to the air; its solutions should therefore be prepared just before using. Somewhat later Ehrlich prepared a modification of arsenobenzol or salvarsan, neosalvarsan, which is readily soluble in water and therefore much more convenient to use than the former, although it is pretty generally agreed among those whose experience best fits them to judge that it is less efficient therapeutically.

Both salvarsan and neosalvarsan may be used by intramuscular and intravenous injection; the latter is much to be preferred in adults, but in children in whom the veins are small the intramuscular method may be employed.

The intravenous injection of salvarsan is performed in the following manner: The dose, 0.6 for an adult man, somewhat less for a woman, is dissolved in 30 c.c. of sterile, freshly distilled hot water in a suit-

able glass jar, also thoroughly sterilized, with frequent shaking. When it is dissolved, a sterile fifteen per cent. solution of sodium hydroxide is added, drop by drop, until a fine precipitate appears *and is redissolved;* sufficient sterile, freshly distilled water is then added to bring the whole to 200 c.c. The whole is then filtered through a sterile filter into the injection apparatus. Any large vein conveniently situated may be used for the injection, but one of those in the bend of the elbow is commonly chosen. The skin over and around the vein selected is thoroughly cleansed with alcohol and with ether, a tourniquet is firmly but not too tightly placed around the upper arm and the needle carefully inserted into the vein. When the flow of blood from the needle indicates that it has entered the vein the tube of the injection apparatus is attached to the needle and the injection of the salvarsan solution begun. The patient should be in the recumbent position and about ten minutes should be consumed in the injection.

The injection of neosalvarsan is a much simpler matter. The dose (0.9 for an adult) is dissolved in 20 to 40 c.c. of freshly distilled water at room temperature (it must not be heated) and injected into a vein either with the apparatus used for salvarsan or with a glass syringe of sufficient capacity. Ravaut and others have shown that much more concentrated solutions may be safely employed—as little as 10 c.c. of water may be used to dissolve the dose.

If for any reason the intramuscular injections are preferred to the intravenous ones, the oily suspensions should be used rather than the aqueous solutions; the latter are painful, often extremely so, may give rise to marked inflammatory reaction and at times to extensive necrosis. The oily suspensions may be obtained in sterile ampoules ready for use. Intramuscular injections of neosalvarsan are especially indicated in children in whom the small size of the veins frequently make intravenous injections impracticable. They are to be made into the gluteal region in the same manner as mercurial injections, with the strictest asepsis, and the dose should be proportioned to the age.

From three to four intravenous injections of salvarsan should be given at intervals of a week, and these should be followed by a course of intramuscular injections of gray oil or the salicylate of mercury, eight to ten injections.

The presence of cardiac or renal disease or advanced disease of the brain and cord contra-indicates the use of salvarsan; if used at all under such circumstances, it should be with the utmost caution and a full appreciation of the dangers attending its use.

Occasionally nausea, vomiting, chills and fever follow within a few hours after an injection, and rashes, usually morbilliform or scarlatinoid, may appear, but all these symptoms, which were quite common when the drug was first employed, are comparatively infrequent since only freshly distilled water has been used for making the solutions.

The iodides of potassium and sodium are especially indicated in the

lesions of late syphilis, such as the nodular and gummatous forms. They are of little value in the secondary stages. They may be given in doses of five to ten grains (0.32 to 0.65) three times a day; in exceptional cases much larger doses may be necessary. As Hutchinson pointed out many years ago, and as the author has had the opportunity to demonstrate many times, they are quite often as effective in much smaller doses, two or three grains, than in those commonly given, especially if the patient has not taken them before. The cure produced by the iodides is a symptomatic one only, and they should be given either with mercury or should be followed by it or salvarsan.

In most secondary eruptions local treatment is not necessary and may therefore be dispensed with. In the case of the nodular syphiloderm or of ulcerating gummata, however, local treatment will accelerate the disappearance very materially. An ointment of calomel or ammoniated mercury, thirty to sixty grains (2.0 to 4.0 to the ounce (32.0) will often answer well; or a piece of spread mercurial plaster, changed daily or every other day, makes a convenient, cleanly and effective application.

Whatever the remedy chosen or the method of treatment employed, it should be begun at the earliest possible moment after the diagnosis has been established, and should be continued not only for some time after all symptoms have disappeared, but until a permanently negative Wassermann reaction has been obtained. Two months after the suspension of the treatment, a Wassermann test should be made, and if negative another should be made at the end of two or three months again, and so on for at least a year. Should the reaction become positive again after having been negative for a time the treatment should be resumed as before.

LEPRA

Synonyms.—Leprosy; Elephantiasis græcorum; Fr., la lepre; Aussatz; Spedalskhed.

Definition.—An extremely chronic infectious and contagious disease, due to the bacillus lepræ, affecting principally the tegumentary and nervous systems and ending almost invariably in death.

Known since the earliest historic times, leprosy is one of the oldest, if not the oldest, of the great plagues which afflict mankind. Originating in the Orient, probably in Egypt or in India, it slowly spread to Europe by way of Greece and Italy. During and immediately following the Crusades there was an enormous increase of the malady in Europe. In the beginning of the thirteenth century there were no less than 2000 leproseries in France alone, while in the whole of Christian Europe there were 19,000. It continued to spread until the beginning of the fifteenth century, when it began to decline in consequence of the restrictive measures adopted, chiefly isolation of the diseased.

Although no part of the world is entirely free from it, it is found chiefly in India, China, Japan, the coastal regions of Africa and in Egypt, in Sweden and Norway, Iceland, Russia, the islands of the

South Pacific, in the West Indies, Mexico and in Central America and the northern countries of South America. In the United States it is found to a very limited extent in the Northwest, almost exclusively among immigrants from the Scandinavian peninsula, in Louisiana, on the Pacific Coast among Chinese immigrants. Isolated examples of it are almost always present in the large cities of the East, such as Boston, New York and Philadelphia.

The time which elapses between the entrance of the infecting organism and the appearance of the first manifestations of the disease, the period of incubation, varies within wide limits; it may be but a few months or it may be several or even many years. Bidenkap observed a case in which the period of incubation was only a few weeks; Arning, one of three months; Morrow, one of ten months, the disease appearing within that period after a sojourn of two weeks in the Sandwich Islands; Leloir has reported one of 14 years, while Danielssen and Boeck have observed still longer periods. In all probability the duration of the incubation period depends upon a number of factors, such as individual susceptibility, the varying virulence of the lepra bacillus, hygienic surroundings, etc. The appearance of definite and characteristic evidences of infection is, as a rule, preceded by a period during which symptoms of an indefinite character appear. Attacks of slight fever with chilliness and malaise or well-marked chills with considerable elevation of temperature lasting for some days appear at irregular intervals; headache, vertigo, epistaxis, profuse sweating and muscular pains, likewise occur without apparent cause. In cases in which the nervous system is chiefly involved, in addition to the febrile attacks, there are hyperæsthesia, neuralgia, pruritus, formication and various forms of paræsthesia. None of these prodromal symptoms exhibit anything characteristic, and are in consequence commonly attributed to " catching cold," malaria, rheumatism, etc. Exceptionally such symptoms are completely absent, or so mild and infrequent as to escape the patient's attention altogether. The duration of this prodromal period varies from some months to a year or more.

The symptoms of leprosy are numerous and of a varied character, and are referable chiefly to the tegumentary and nervous systems, although in the more advanced stages symptoms indicative of visceral involvement likewise occur. According as the bacilli invade the skin or the nerve trunks and branches, the disease presents two principal varieties, viz., tubercular leprosy, lepra tuberosa, and anæsthetic or nerve leprosy, lepra anæsthetica, lepra nervorum. In a certain proportion of cases mixed forms occur in which the symptoms are those of both varieties—mixed leprosy.

Lepra Tuberosa.—Symptoms.—The earliest cutaneous symptoms of this variety are usually macules and erythematous patches (erythema leprosum) varying in color from pink to a brown-red, according to the complexion of the patient and the duration of the eruption; they are pink or red in those with fair skins and in the early stages, brown-red or

sepia in those with dark complexions, or when they have lasted for some time. These patches vary in size from that of a coin to the palm, are round or oval in shape, the centre usually deeper in color than the periphery, with an oily shining surface; or they may be annular or band-like and marginate like those of erythema multiforme, a form, according to Leloir, rare in the face, but common upon the trunk. They may remain stationary or may slowly increase in size for a time after their appearance, and then gradually fade. The earlier eruptions, after a variable duration, usually disappear, leaving no trace. They are seen usually upon the dorsal surface of the hands and feet, rarely upon the palms and soles, in the face and less frequently upon the trunk. Their appearance is frequently preceded by chills and more or less elevation of temperature which subsides with the appearance of the eruption. Subjective symptoms may be entirely absent, or there may be hyperæsthesia, itching, pricking formication, or incomplete anæsthesia. From time to time new eruptive outbreaks occur, preceded or attended by constitutional symptoms and the patches instead of disappearing as in the earlier stages, remain, becoming deeper in color, usually brown or occasionally black, and presenting some infiltration, which marks the beginning of the nodular stage. At times the centre of some of these later patches may be entirely depigmented and completely anæsthetic, resembling the white patches of vitiligo in appearance. This is, however, much less frequent in the nodular than in the anæsthetic variety.

The hair suffers in its nutrition; it becomes thinned, brittle and falls out. This leprous alopecia is usually most noticeable in the eyebrows, where it begins, but it likewise affects the hair of the trunk, occurring chiefly, if not exclusively, at the site of the eruptive patches. The hair of the scalp, however, usually shows little or no alteration and may be quite normal, this immunity being due to the fact that this region is seldom the seat of eruption.

Although most authors deny the occurrence of tubercular lesions without a precedent stage of erythematous or macular eruptions, Leloir asserts that in rare cases the first lesions may be tuberculous or nodular.

After a period varying from some months to several years, during which the symptoms consist of the erythematous and pigmented eruptions already described, thickened patches and tubercles appear, commonly at the site of such patches, but also in places where the skin has previously shown no sign of disease. The infiltration may occur as flat, thickened plaques or as distinct nodules and tubercles varying in size from that of a pea to a hazel-nut, and larger; the latter may be discrete or when numerous, may form bosselated plaques of variable extent. In color they vary from a pink to violaceous, from yellow to mahogany-red or sepia, the darker lesions occurring in the dark-skinned individuals. Although they may appear on almost any portion of the body except the scalp, which almost invariably escapes, they exhibit a decided predilection for the face, especially the forehead in the

supraorbital region, where the first infiltrations appear, upon the nose, ears, particularly the lobules, upon the dorsal surface of the hands and feet, upon the thighs and buttocks (Fig. 104). In the earlier stages the tubercles are usually small, varying in size from that of a shot to a pea, resembling the papules of acne, or the nodules of syphilis or lupus, but as the malady progresses they increase in size and number, some of them

FIG. 104.—Lepra tuberosa. (Dr. John A. Johnston.)

reaching the size of a nut and larger, often producing when numerous and closely aggregated, thickened areas with irregular nodular surfaces, the individual lesions often separated by well-marked furrows. Upon the face this thickening is especially noticeable in the supraorbital region producing a marked and characteristic leonine appearance (leontiasis). The lobes of the ears are frequently transformed into brownish-red or violaceous pendulous masses. At times the flat infil-

trated patches present a markedly stippled appearance, owing to exaggeration of the mouths of the follicles, a feature which was especially well marked in a case under the author's observation some years ago.

Alterations of sensation, such as hyperæsthesia, or all degrees of diminished tactile sensibility, the latter being more frequent than the former, are often, but not invariably present.

The alterations of the pilo-sebaceous apparatus become still more marked; in consequence of the suppression or diminution of the sebaceous secretion, the skin is harsh and dry and complete loss of hair takes place at the site of the lesions.

The nails occasionally exhibit signs of disease; they are distorted in consequence of interference with their growth, or they are lost either as the result of leprous infiltration and subsequent ulceration of the nail-bed, or may fall without any special alteration.

The progress of the disease may be slow and continuous, new nodules appearing, while the older ones increase in size or undergo resorption; or new lesions may appear in successive crops at irregular intervals, the eruptive outbreaks occurring acutely and preceded or accompanied by constitutional disturbance which subsides with the appearance of the eruption. These acute outbreaks, as Danielssen and Boeck have shown, are coincident with the softening and absorption of some of the nodules, and as Leloir believes, are due to absorption of leprous virus by the lymphatics. At times the accompanying eruption resembles erysipelas, at others it presents the appearance of erythema nodosum.

The lymphatic glands, particularly those of the groin, more or less swollen from the beginning of the tubercular eruption, may at times reach a considerable size, and, in infrequent cases, undergo suppuration.

After reaching a certain stage of development, the tubercles may show but little change for an indefinite period, but eventually they either undergo gradual absorption, or ulceration. Occasionally they undergo a kind of fibrous degeneration resembling keloid; diminishing in size, they increase in firmness, the skin covering them becoming atrophied and whitish. Interstitial absorption may take place; the nodules become less prominent and eventually disappear, leaving a slightly depressed, more or less pigmented scar. In certain cases owing to softening and absorption of the central portion of a nodule it may present an umbilicated appearance. In the later stages of the malady ulceration of many of the lesions takes place, especially upon the hands and feet and in the face, either spontaneously or as the consequence of traumatism often of a trivial character. The ulcers are round or irregular in shape, with well-defined edges or undermined borders, and of variable extent and depth. At times the ulceration is extensive and deep, penetrating joints, laying bare tendons and bones, followed by

necrosis of the latter and the loss of members, such as fingers and toes. Although these ulcers are usually sluggish and of indefinite duration, they frequently heal with rest and cleanliness.

In addition to those upon the skin, tubercles occur frequently upon the mucous membranes of the nose, mouth, pharynx, larynx and upon the conjunctiva; and these like those upon the skin undergo softening and ulceration. The mucous membrane of the nose is especially apt to be invaded; Morrow was of the opinion that the earliest manifestations of the disease frequently occurred in this region, an opinion likewise held by Sticker. When the larynx is invaded, its functions are sooner or later impaired; the patient becomes hoarse or aphonic, and, as a consequence of cicatricial contraction following ulceration, dyspnœa, sometimes of a marked character, and even strangulation, may result. As the result of invasion of the conjunctiva, blindness frequently occurs, the leprous nodules which begin in the conjunctiva spreading to the cornea and invading the deeper parts of the eye.

In the great majority of cases the disease pursues a very chronic course, lasting from eight to ten years, and longer, the patient eventually dying from exhaustion resulting from extensive and long-continued ulceration or from some intercurrent affection, such as pulmonary tuberculosis or nephritis. When the larynx is invaded death may occur from suffocation. Arning and others regard the pulmonary and nephritic complications as the result of leprous invasion of the lungs and kidneys, and not as independent diseases.

In a small proportion of cases new nodules cease to appear after a time, the ulcers heal and actual or symptomatic recovery takes place.

In rare cases the malady pursues an acute course. It begins with high fever accompanied by intense headache, delirium, diarrhœa and other symptoms of a typhoid character, followed shortly by an eruption of leprous nodules in the skin and mucous membranes which rapidly ulcerate. These acute symptoms may then subside and the disease pursue the usual chronic course; or death may occur from pneumonia, exhausting and uncontrollable diarrhœa, etc.

Lepra—Anæsthetica: Lepra Nervorum.—Symptoms.—The prodromal symptoms of anæsthetic leprosy do not differ essentially from those which precede the tubercular form, but the febrile attacks which occur in the former are less frequent than in the latter, and symptoms referable to the nervous system are apt to predominate. Prodromal symptoms, while present in the great majority of cases, are occasionally so trivial as to escape the patient's notice altogether, and in exceptional cases may be entirely absent.

As in lepra tuberosa, slowly spreading erythematous and pigmented patches appear upon the face, trunk, and extremities, in the last-named region affecting the extensor rather than the flexor surfaces, and more frequently arranged symmetrically than in the tuberous form. They may be round, oval or irregular in shape without well-defined borders, or like the eruption of erythema multiforme, they may

be marginate, annular or polycyclic in contour (Figs. 105, 106, and 107). The color of the patches varies considerably; it may be pink, yellowish-red, dark-red, violaceous, slate-colored, varying shades of brown, from sepia to almost black. It usually becomes duller and deeper with time, but may completely disappear in the centre of the patches, leaving them dull white and completely anæsthetic.

The hair in the patches loses its color, becomes thin and dry and

Fig. 105.—Lepra, maculo-anæsthetic. (Dr. John A. Johnston.)

eventually falls out. The secretion of the sweat and sebaceous glands is at first scanty, later completely suppressed, and the skin in consequence becomes dry, harsh and desquamating.

In the beginning the affected areas are the seat of hyperæsthesia, pruritus, formication, or other abnormal sensations, but after a time these are replaced by diminished sensibility and eventually by complete abolition of sensation.

Instead of an erythematous eruption, the first cutaneous symptom may be an eruption of blebs and bullæ resembling those of pemphigus,

although such lesions are more commonly seen in the later stages when they are not uncommon. Their appearance may or may not be preceded by general symptoms, such as fever, headache, and malaise. They are rarely numerous, vary in size from that of a pea to a hazelnut, occasionally larger, and are situated upon the back of the hands, tops of the feet and the extensor surface of the elbows and knees. They may continue to appear for an indefinite time, or during the whole duration of the malady, associated with other forms of eruption, or as the only symptom for a number of years (*lepre lazarine*). They may

Fig. 106.—Macular leprosy. (Dr. John A. Johnston.)

be followed by destructive ulceration or they may crust over and eventually heal, leaving permanent anæsthetic cicatrices.

Along with the cutaneous symptoms, or a variable period after their first appearance, or even when these are wholly absent, symptoms on the part of the nervous system appear, sometimes preceded by elevation of temperature. These are the result of the invasion of the nerve trunks and their branches by the lepra bacillus. At first there is more or less marked hyperæsthesia, at times extreme, making the slightest touch upon the affected parts painful. This increased sensitiveness occurs not only in the areas occupied by eruption, but often in the parts

adjoining. It may be limited to certain regions or it may be widespread. Paræsthesia of various kinds, such as pricking, formication, sensations of heat or cold, frequently occur. Neuralgic pains following the course of the nerve trunks are frequent, coming on paroxysmally and usually worse at night. The trunks of the nerves, particularly the ulnar, tibial and peroneal, present fusiform or, much less frequently,

Fig. 107.—Lepra, maculo-anæsthetic. Pinkish and violaceous rings.

nodular swellings. The thickened ulnar nerve is usually readily palpable where it passes over the internal condyle of the humerus, and like the other thickened nerve trunks, is more or less painful on pressure.

After a period varying from some months to several years these symptoms are succeeded by others indicative of degeneration of the peripheral nerve trunks and their branches. Tactile sensibility is diminished or notably retarded, the patient experiencing difficulty in

picking up small objects because of this loss of sensation. There is occasionally dissociation of sensation, the temperature sense diminishing or disappearing before tactile sensibility. Eventually areas of anæsthesia, usually symmetrically distributed, appear, beginning upon the extremities, particularly the hands and feet, and later involving the face, and, occasionally, the trunk. Along with these sensory disturbances, trophic changes occur; the muscles of the extremities atrophy, this atrophy beginning commonly in the upper extremities, usually in the hand and forearm, the muscles of the thenar eminence and the interossei being first affected. The flexors and extensors of the forearm soon become involved and contractures of the tendons follow, produc-

Fig. 108.—Anæsthetic leprosy; contraction of fingers, so-called leper claw. (Dr. John A. Johnston.)

ing the peculiar contraction of the fingers upon the palms, the so-called "leper claw" (Fig. 108). Similar changes occur in the lower extremities.

In consequence of inflammatory and degenerative changes in the fifth and seventh pairs of cranial nerves, atrophy and paralysis of the facial muscles occur. The mouth may be drawn to one side; there may be inability to completely close the eye as a result of paralysis of the orbicularis palpebrarum, or because of ocular motor paralysis the patient may have a peculiar, fixed stare. From paralysis of the buccinators and of the orbicularis oris the cheeks may be flaccid and the lower lip pendulous, permitting the saliva to flow from the mouth.

The mucous membranes of the nose, mouth and pharynx also exhibit sensory and trophic disturbances. The palatal and pharyngeal mucous membrane may be completely insensitive. The muscles of deglutition may be paralyzed, so that swallowing is performed with difficulty, food and drink regurgitating through the nose.

The skin in the anæsthetic areas undergoes atrophy; it becomes thin and wrinkled, or, when it covers bony prominences, tense and smooth, and is abnormally dry from suppression of the sebaceous secretion and the sweat. This dryness and loss of elasticity leads to fissuring about the joints and the fingers and frequent ulceration (Fig. 109). The nails become dystrophic, are more or less deformed and occasionally lost.

As a result of defective innervation, slight injuries are frequently

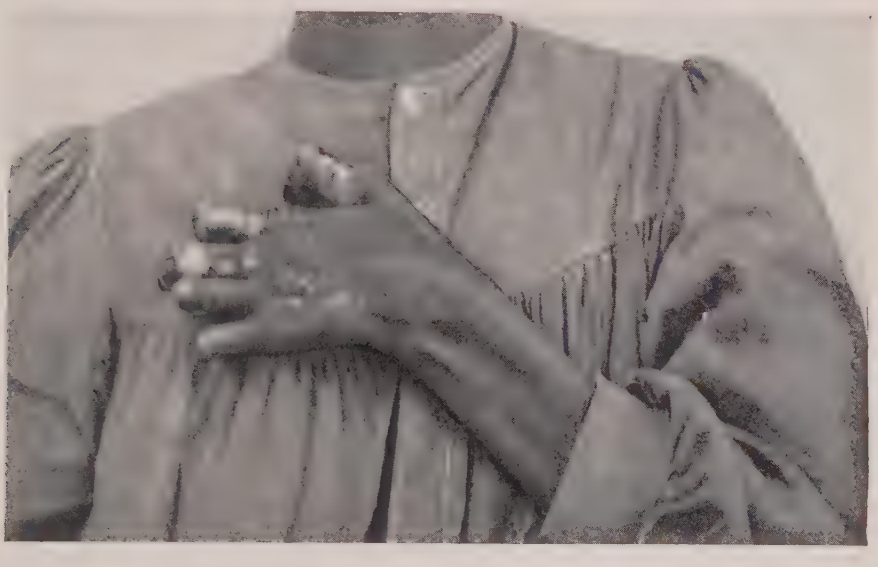


Fig. 109.—Lepra anæsthetica. (Dr. John A. Johnston.)

followed by indolent and painless ulcers, which, on the extremities, especially the fingers and toes, may result in the loss of phalanges or even of the hand or foot. Perforating ulcers occur, especially upon the sole, which, extending to the deeper tissues, lay bare the bony structures, and as the result of such ulceration extensive mutilation is produced. Or absorption of the bony structures may lead to similar mutilation and deformity.

The duration of the anæsthetic variety is usually notably longer than that of the tubercular form. The febrile attacks so common in the latter are much less frequent and less pronounced. Anæsthesia eventually involves all the extremities, the face, and, in advanced stages, the entire body. Deformity and mutilation of the hands and feet may reach an extreme degree, and paralysis of the facial muscles may ban-

ish all expression from the face, which then resembles a mask. Death eventually occurs from exhaustion or amyloid degeneration of the liver and kidneys. Pulmonary tuberculosis is a much less frequent complication than in the nodular variety.

Mixed Leprosy: Complete Leprosy.—As already remarked, in a certain proportion of cases, about fifteen per cent., symptoms of both the tubercular and anæsthetic types occur either simultaneously, which is infrequent, or in succession. In a small number of cases the symptoms are of the mixed type from the beginning. According to Leloir the tubercular form may be completely replaced by the anæsthetic type, the tubercles completely disappearing, to be succeeded by symptoms referable to the nerve trunks and their branches.

Etiology.—Leprosy is very uncommon before the fifth year, although it has been observed as early as the second year. In the majority of cases it begins in the second or third decade of life. Sex has apparently but little influence upon its occurrence, although it is much more frequent in women than in men, probably owing to the greater exposure to infection of the latter through their occupations. Dark races are much more susceptible than Europeans. Unfavorable hygienic surroundings and bad or insufficient food, by lowering the individual's powers of resistance, may and probably do make him more susceptible to the infection. Certain articles of food, particularly fish, imperfectly cured, have long been regarded as a contributing cause. Among modern authors, Sir Jonathan Hutchinson vigorously upheld the view that the consumption of fish, particularly spoiled fish, was a potent cause of the malady. This view, however, is not accepted by the majority of investigators.

Although most prevalent in tropical regions, and hence regarded as a tropical disease, it also occurs in cold climates—indeed no region of the world is entirely exempt, and climate, therefore, cannot be regarded as an etiological factor, although the type of the disease seems to be influenced by it. The nodular type is more prevalent in cold latitudes, while the anæsthetic variety is seen more frequently in the tropics. When introduced into virgin soil, like other infections, it shows unusual virulence, spreading with great rapidity, as is illustrated in the Sandwich Islands and in New Caledonia. In the latter place it was introduced in 1865 and in 1888 there were some 4000 cases. In the early ages it was regarded as highly contagious, but later this was denied. At present, contagiousness of the malady is generally admitted, although intimate and prolonged contact is necessary for its transmission. The possibility of its hereditary transmission was long regarded as established, but at present few experienced observers believe this a common occurrence.

The direct exciting cause is a bacillus resembling in its morphology and tinctorial properties the bacillus tuberculosis, discovered, in 1874, by Hansen. The manner in which this organism enters the human economy is as yet quite unknown. Although many attempts at in-

oculation have been made, these have for the most part resulted in complete failure. Within the past few years a number of successful experimental inoculations in animals have been reported, but none of these are conclusive in their results. Although the possibility of its transmission by the bites of insects, such as fleas, mosquitoes and bedbugs, has been suggested, there is as yet no positive proof that it may be so transmitted.

Morrow, Sticker, and others believe that the nasal mucous membrane is the port of entrance for the bacillus in a large proportion of cases. Sticker found the organism in the nasal secretion in 128 out of 153 cases examined and believes that the malady begins with an initial lesion, an ulcer, on the septum.

Pathology.—The bacillus lepra, the direct cause of leprosy, is an acid-fast organism resembling closely in its size, shape and staining properties the bacillus tuberculosis. It is about five microns long, one micron broad, straight or slightly curved, somewhat thinner at the ends than in the central part, and frequently exhibits a bead-like arrangement resembling a chain of spores (Fig. 110). It differs from the tubercle bacillus in staining somewhat more readily with the weak carbol-fuchsin stain and in being somewhat less resistant to acids. It is very abundant in the nodular lesions of the skin, but is present only in small numbers in the macular and erythematous patches and in the nerve trunks in the earlier stages of the anæsthetic variety. It is found in the viscera, such as the lungs, liver and the spleen, producing in the first-named, lesions resembling those of tuberculosis. It is likewise found in the testes and lymphatic glands. It occurs in large numbers in the purulent discharge from the nose and in the pus of ulcerated nodules. In the tissues it is found both within and between the cells.

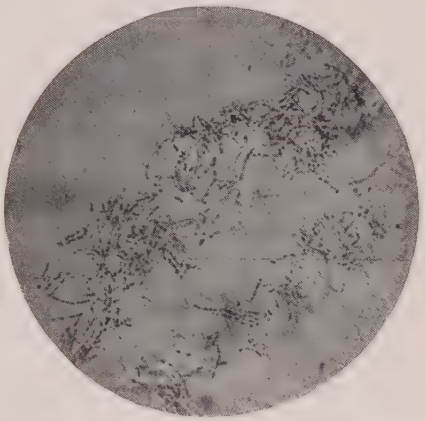


FIG. 110. —Bacillus lepræ. Smear from a nodule of Hawaiian leprosy (prepared by Dr. Joseph V. Klauder).

Until quite a recent period, all attempts at the cultivation of the organism failed, but within the past few years a considerable number of successes have been reported. The results obtained, however, by numerous experimenters by no means agree, the organism grown differing considerably from the organism as seen in the tissues. The most recent view is that the organism is pleomorphic to a marked degree, its character varying according to the age of the culture and the media upon which it is grown. By some bacteriologists it is believed to be a streptothrix which breaks up into acid-fast rods. In a recent summing up of the result obtained from the attempts to grow the organism

Fraser and Fletcher conclude that the bacillus has not yet been cultivated. Experimental inoculation invariably fails, if we except the doubtful case of Arning. Until a recent period, Rost, Bayon, Duval, Reenstierna, and others claim to have succeeded in producing lepra-like lesions in dancing mice, rats and monkeys by employing cultures of an organism obtained from leprous lesions.

According to Unna the bacillus is always extra-cellular and is situated in the lymph-spaces of the corium. According to him, the lepra cells, or " globi," are not cellular structures, but masses of bacilli embedded in a mucous envelope. Leloir asserted that the organism was found both in and between the cells, while Hansen found them only in the cells.

The histological changes are those characteristic of the infectious granulomata. The epidermis is usually but little altered, and such alterations as are present are secondary to the changes in the corium. Immediately beneath the lower border of the rete is a narrow zone in which there are neither bacilli nor tissue changes. In the central portions of the corium are more or less circumscribed foci composed of plasma cells, leucocytes, a few giant-cells and the so-called lepra cells, or " globi," containing numerous bacilli. Hansen and Looft asserted that in many thousand examinations of leprous tissue which they had made they had never found giant-cells of the Langhans type. When these were present they regarded them as indicative of a mixed infection, tuberculosis and leprosy. But typical cells of this type have been observed by Jadassohn, Darier, Klingmüller, and a number of others, both in the tubercular and anæsthetic forms of the malady.

Diagnosis.—The symptoms of the prodromal stage, such as irregular attacks of chilliness and fever followed by profuse sweats, headache, nose bleed, etc., present nothing characteristic, although when they occur without obvious cause in individuals living in regions where leprosy is endemic they should excite suspicion. The early cutaneous symptoms, such as erythematous patches, may be mistaken for ordinary erythema, which they may resemble more or less closely, but from which they differ by their greater extent, longer duration, and the usual presence of more or less anæsthesia, especially marked in the centre of the patches, sometimes accompanied by hyperæsthesia of the borders. Leloir attaches great importance to the absence of desquamation as a diagnostic symptom. The nodules may be mistaken for the lesions of syphilis, especially when they are small and widely distributed, but they lack the circinate or crescentic arrangement so frequent in the latter, and the amount of infiltration is usually greater, the course is much more sluggish and they usually show a decided predilection for the face, especially the supraorbital region, producing, when abundant, the characteristic leonine appearance. Owing to the fact that leprosy gives a positive Wassermann reaction, that reaction is not available as a diagnostic procedure in the differential diagnosis of the two affections.

Lupus vulgaris, when extensive, may at times be confounded with leprosy, but the lesions of the former are usually much more superficial, are never accompanied by anæsthesia and are rarely so extensive in their distribution.

Granuloma fungoides has certain features in common with leprosy, but the erythema of the prefungoid stage of this affection is usually decidedly eczematous, not only in its appearance, but in the intense pruritus which accompanies it. The ulcerations which occur in the fungoid stage are usually quite unlike the ulcers of leprosy.

The achromatic patches of the anæsthetic variety present certain resemblances to vitiligo and morphœa, but may readily be distinguished from these by their less well-defined borders and more particularly by the presence of anæsthesia, especially in the centre of the patches where it is often complete. The muscular atrophies and contraction, which are such prominent symptoms in anæsthetic leprosy, resemble in many ways those which follow other forms of neuritis, but are to be distinguished from these by the presence of cutaneous eruptions and the previous history. The affection with which anæsthetic leprosy is most likely to be confounded is syringomelia, but in the latter so-called dissociated anæsthesia, that is, alterations of the pain and temperature sense, without abolition of tactile sensibility, is a characteristic symptom, while in leprosy it is infrequent. Painless whitlow or felon, associated with trophic disturbances, a variety of syringomyelia known as Morvan's disease, is another characteristic symptom not found in leprosy. Cutaneous eruptions preceding the sensory and trophic disturbances occur in leprosy but are absent in syringomyelia.

In doubtful cases search should be made for the bacillus in the nasal secretion and in the discharge from ulcerating lesions, or a biopsy may be performed and search made for the lepra bacillus and the so-called "lepra cells" in sections of the lesions. It must not be forgotten, however, that the organism is sometimes absent from the erythematous and pigmented patches, or present only in very small numbers so that it can be found only by examining a large number of sections.

Prognosis.—The vast majority of cases of leprosy terminate fatally, but the duration of the malady varies within wide limits, the nodular variety running a much more rapid course than the anæsthetic form. In the former the average duration is about ten years, although quite exceptionally death may occur within a year or two. The average duration of the anæsthetic form varies from fifteen to thirty years and may be even considerably longer. The progress of the disease is usually retarded by the patient's removal to a temperate climate, by an abundance of good food and by careful antiseptic treatment of ulcerating lesions. In exceptional cases a spontaneous cure or an arrest of the malady takes place, this being more frequently observed in the anæsthetic than in the nodular variety. In a considerable proportion of cases death occurs as the result of some intercurrent disease, one of the commonest being pulmonary tuberculosis.

Treatment.—There is as yet no known specific for leprosy, although the course of the disease may at times apparently be favorably modified; or at least prolonged, by the use of certain remedies.

When possible the patient should be removed to a temperate or cool climate. He should be placed in the best hygienic surroundings, should have an abundance of wholesome food and should pay the most careful attention to cleanliness of person and clothing.

Among internal remedies chaulmoogra oil, an oil expressed from the seeds of an East Indian plant, the *gynocardia odorata,* is apparently the most efficacious. It is given in doses of from five to ten drops, either in capsule or in emulsion, gradually increasing the dose to the limit of tolerance. Quite recently it has been employed hypodermatically with decided benefit. Heiser employs the following oily mixture: Chaulmoogra oil and camphorated oil, each 60 c.c., resorcin, 4 grammes. Mix, dissolve with the aid of heat, and filter. Injections of this mixture are made once a week in increasing doses, the initial dose being 1 c.c. Heiser has obtained better results from this treatment than from any other. Sandwith and Manson likewise employ the oil hypodermatically. In connection with its internal administration, inunctions may also be used on the affected areas, mixing it with equal parts of olive oil or lard. The treatment should be long-continued. Instead of the oil, gynocardic acid or its sodium or magnesium salt may be given in doses of one-half to three grains (0.03 to 0.20) three times a day.

Quite recently Rogers has employed the gynocardate of sodium hypodermatically, beginning with a dose of one-tenth of a grain (0.006) and gradually increasing it to four-fifths of a grain (0.052). He observed a local reaction in the leper tissue after injections of two-fifths of a grain (0.026).

Gurjun balsam, wood oil obtained from the *dipterocarpus lævis,* is employed in the same doses and in the same manner as the chaulmoogra oil, but seems less useful and has somewhat fallen into disrepute.

Strychnia, or nux vomica, likewise exerts a beneficial effect and may be given in conjunction with chaulmoogra oil.

Crocker obtained decided benefit from the hypodermatic injection of bichloride of mercury, giving one-quarter grain (0.016) in aqueous solution once or twice a week and continuing the treatment for a long period.

Danielssen regarded salicylate of soda as the best internal remedy, beginning with a dose of fifteen grains (1.0) four times a day and gradually increasing it. Unna claims to have obtained favorable results, even a cure in several cases, from the internal administration of ichthyol combined with the local application of reducing agents, as pyrogallol or chrysarobin in ten per cent. ointment. In a case of nerve leprosy Manson saw all the symptoms disappear after the administration of thyroidin. Salvarsan has been employed recently with varying results; upon the whole, the reports have not been favorable to its use.

PLATE XIX

Granuloma fungoides. Beginning tumor formation and ulceration.

Repeated attempts have been made to produce curative sera and vaccines, but they have, for the most part, been failures. Rost, by employing a substance obtained from leprous nodules which produces a reaction resembling that following tuberculin, obtained favorable results, but others have failed with it.

Deycke obtained from cultures of the *streptothrix leproides* an organism which he found in leprous nodules and cultivated upon milk, a fatty substance to which he gave the name "nastin." Combined with benzoyl chloride and dissolved in sterile olive oil, this forms his "nastin B," which is employed hypodermatically. Although favorable results have been reported by a number of authors, its use upon the whole has been disappointing. Wise, experimenting with it in British Guiana, obtained better results from benzoyl chloride alone.

Systematic exposure of the diseased parts to the X-ray produces temporary improvement, sometimes of a marked character, causing the nodules to undergo involution. Heiser has reported an apparent cure from X-ray treatment.

The ulcerating lesions should be kept as clean as possible by the frequent employment of mild antiseptic solutions, such as mercuric bichloride, 1 : 2000; a saturated solution of boric acid, hydrogen dioxide or weak solutions of formalin. Ointments of aristol, iodoform, europhen, balsam of Peru, and salicylic acid are likewise useful.

There can be no doubt that the most effective, if not the only effective measure for the prevention of the spread of the disease is isolation of the diseased individual. Wherever and whenever this measure has been adopted there has been a steady diminution in the number of cases. While the efficacy of segregation cannot be denied, it should be employed with judgment and modified according to the circumstances of the individual case. The subject of anæsthetic leprosy is little, if at all, dangerous to those with whom he may come in contact and may accordingly be allowed considerable liberty, but the individual with nodular leprosy, with ulcerating lesions, should be rigidly isolated.

GRANULOMA FUNGOIDES

Synonyms.—Mycosis fungoides; Lymphadénie cutanée; Inflammatory fungoid neoplasm; Sarcomatosis cutis; Lymphomatose cutanée generalisée (Plate XIX).

This fatal and fortunately rare disorder was first described by Alibert, who regarded it as closely related to yaws, and gave it the name *pian fungoïde,* which later he abandoned for mycosis fungoides. Other authors who have since greatly contributed to our knowledge of its clinical features and histopathology are Bazin, Ranvier, Vidal and Brocq, Besnier and Hallopeau, Köbner and Duhring.

Definition.—A chronic and almost invariably fatal disease characterized by dermatitis, frequently eczematoid in type, followed by tumors which terminate in ulceration.

The malady presents three usually well-marked stages, although

the boundaries which separate them are often ill-defined. In a considerable number of cases the disease begins with more or less marked pruritus unaccompanied by any eruptive symptoms. This is followed, after a variable period, by a dermatitis, most frequently of an eczematoid character consisting of scattered and ill-defined more or less scaly

Fig. 111.—Granuloma fungoides. Early, so-called premycosic stage with red eczematoid patchy eruption accompanied by severe itching.

patches distributed over the trunk (Fig. 111). At other times these patches, instead of being diffuse and without special configuration, are round and well defined, somewhat annular, with slightly elevated borders. In the early stages the malady is at times scarcely or quite indistinguishable from eczema and is frequently mistaken for that

PLATE XX

Granuloma fungoides. Scaly erythrodermia preceding tumor stage.

PLATE XXI

Erythematous lupus.

affection. In other cases this dermatitis is markedly psoriosiform, so much so that it at times is mistaken for psoriasis. Whatever the type of inflammation, it is usually accompanied by itching often of a very severe character. In a considerable proportion of cases, instead of being patchy, it is universal in its distribution, occupying the entire cutaneous surface. In such cases it may present the features of a universal dermatitis exfoliativa (Plate XX). This stage, the premycosis erythrodermia of French authors, is of variable duration, but usually lasts for months and not infrequently for years before the more characteristic symptoms of the malady appear. As variations from the

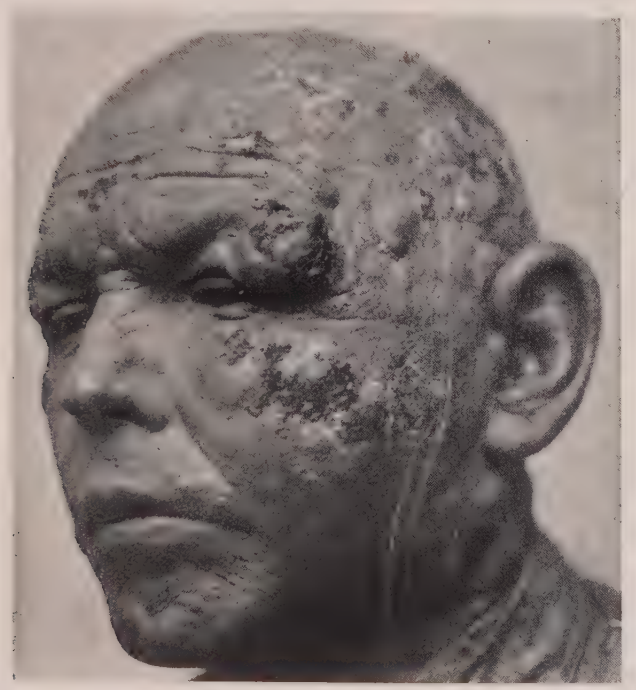


FIG. 112.—Same patient as Plate XXI, two years later. Tumor formation with ulceration; total loss of hair of scalp, brows and beard.

ordinary type, it may begin with an urticarial eruption, or vesicles and bullæ may be present. Upon the scalp and elsewhere the hair becomes thin and dry and may eventually fall out, leaving the parts completely bald.

The second stage, or stage of infiltration, is characterized by variously sized, flat, usually well-defined, slightly elevated plaques, which are red or bluish-red in color. These occur on various parts of the skin and resemble in shape large flat buttons imbedded in the skin. They vary considerably in number and at first certain of them, after a duration of a month or two, spontaneously disappear, while new

ones arise. This stage, as compared with the preceding one, is of rather short duration and is followed after some months by the third, or tumor stage.

In the third stage tumors, varying in size from that of a hazelnut to an egg, appear, most commonly on those parts of the skin which are already inflamed, or in the infiltrated areas, but they also occur on portions of the skin which previously had shown no signs of disease. Smaller tumors occasionally disappear spontaneously after a time, but more commonly they undergo ulceration, forming mushroom-like ulcers with everted vegetating borders. Even when ulceration has occurred, spontaneous healing followed by absorption of the tumor may take place. New tumors continue to appear which sooner or later undergo ulceration. The patient's general health, which up to the appearance of ulceration, had been unaffected, now begins to suffer and death eventually occurs either from exhaustion, from some intercurrent disease, or secondary septic complications (Fig. 112, Plate XXI).

Exceptionally the third or tumor stage is the first manifestation of the disease, the *mycosis d'emblee* of the French. In such cases a dermatitis, resembling that of the first stage, either follows or accompanies the tumors. These cases pursue the usual course but are commonly much shorter in duration than the other forms of the disease.

When the malady has reached its acme it consists of numerous diffuse red and scaly patches, frequently eczematoid in appearance, or rounded, sometimes annular patches with slightly elevated borders, flat, infiltrated, red or bluish-red plaques of variable size, well-defined tumors and fungoid ulcers occupying practically every region of the cutaneous surface.

The duration of the disease varies from a few months to several years. The premycosic stage not uncommonly lasts for a considerable period. In a case recently under the author's observation it had existed for many years as the only symptom of the disease. The stage of ulceration is usually a short one, death occurring in a few months after its appearance.

Etiology.—While it was formerly thought that men were much more frequently affected than women, more recent observations have shown that the sexes are equally subject to it. It is infrequent in young subjects. The earliest age at which it has been observed is fifteen years; its maximum frequency occurs between the ages of forty and sixty. Very little is known about the causes which predispose to it and nothing whatever about its direct causation. A variety of microorganisms has been found in the lesions by a number of investigators, but none of these has been proved to have any causal relationship to the malady.

Pathology.—There is a marked divergence of views, among those who have studied the affection, as to its pathology. The earlier authors regarded it as closely related to sarcoma, if not a variety of that neoplasm; but very few of the more recent investigators entertain this

opinion. A considerable number regard it as closely related to leukæmia of the skin, while others, as Unna, consider it a disease sui generis. While satisfactory proof is as yet altogether lacking, it seems most probable that it is an infection. The histological changes found in the malady are practically the same in all stages, differing only in degree. In the stage of dermatitis, the so-called premycosic stage, there is some thickening of the epidermis, with an increase in the length of the interpapillary prolongations of the rete. In the papillary and subpapillary portions of the corium there is a diffuse cellular exudate made up chiefly of small round cells of lymphoid type, with a few imperfectly developed plasma cells and connective-tissue cells. In the tumors the epidermis is markedly thinned as the result of pressure from below, and the corium is filled with a dense mass of small round cells with a few plasma-cells and an occasional giant-cell. As Unna and others have pointed out, a characteristic feature is the remarkable variety of form exhibited by the cells, in large part the result of degenerative changes, and numerous granules, the result of fragmentation of the cells, are scattered throughout the growth. As a rule "mastzellen" are present only in normal numbers, but in a case studied by the author these were found to be increased in numbers and were larger than usual.

Diagnosis.—In its early stages it is frequently confounded with eczema and, indeed, may be clinically indistinguishable from that affection before the appearance of infiltration and flat plaques; with the appearance of these, however, the diagnosis at once becomes clear. Even in the early stages the microscopic examination of sections of skin taken from the inflamed areas will reveal characteristic histologic features, and may be advantageously resorted to in doubtful cases.

The tumors may be mistaken for sarcoma, but the eczematoid dermatitis, which so frequently precedes and accompanies them, is a very characteristic differentiating feature.

Occurring in regions in which leprosy is endemic, it may be mistaken for that affection, but the characteristic eczematoid dermatitis which precedes the tumor stage almost invariably, and the absence of the bacillus lepra, are features which readily distinguish it from that malady.

Prognosis.—The malady is almost invariably fatal. While a few cases of recovery have been recorded, the diagnosis, in some of these at least, was open to doubt. The duration varies within considerable limits. While in the majority of cases it lasts for two or three years, exceptionally it may terminate in the course of a few months, or, on the other hand, may last for many years, as in a case under the author's observation.

Treatment.—There is no specific treatment. In a limited number of cases the internal administration of arsenic in considerable doses seems to exert an inhibiting influence upon the progress of the malady, but in most cases it is without effect. In recent years the X-ray has

proved of great value; it frequently brings about rapid absorption of the tumors and for a time at least, holds the disease in check. In a few instances it has seemed to have been curative, but it is as yet too early to determine whether the favorable results in such cases are permanent.

BLASTOMYCOSIS CUTIS

Synonyms.—Blastomycetic dermatitis; Dermatitis blastomycotica; Saccharomycosis hominis; Fr., Blastomycose cutanée; Ger., Hefenmykose; Hautblastomykose.

Definition.—A chronic infectious disease of the skin due to a yeast fungus, the *Blastomyces,* characterized by one or more variously-sized patches with a verrucous or papillomatous surface, and a well-defined elevated violaceous border in which are numerous miliary abscesses.

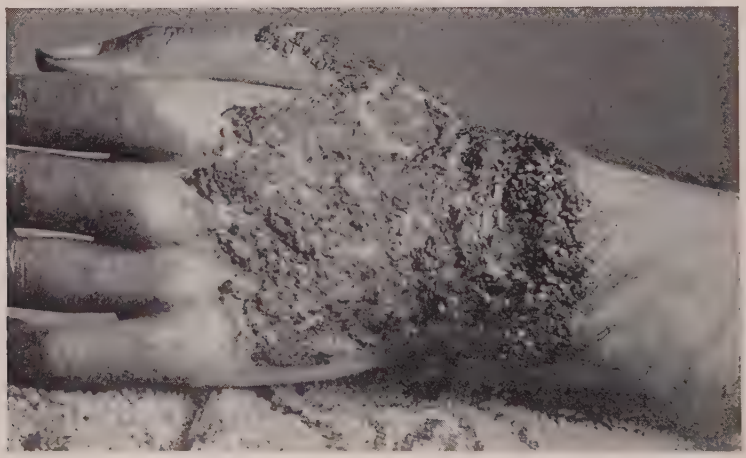


FIG. 113.—Blastomycosis cutis. Seen by the author with Dr. Duhring.

In 1894, at the annual meeting of the American Dermatological Association, Gilchrist demonstrated the presence of blastomycetes in sections taken from a large papillomatous patch on the back of the hand of a middle-aged man under the care of Dr. Duhring, who had made a clinical diagnosis of scrofuloderma. A few months later Busse reported a fatal case of systemic infection by the same organism, in which there had been cutaneous lesions resembling abscesses. Since these first cases, a considerable number of others have been reported by various observers, most of them in the United States, and the disease has been most thoroughly studied clinically and bacteriologically, especially by Hyde, Hektoen, Montgomery and Ricketts, in America, and by Buschke in Germany.

Symptoms.—It usually begins with one or more inflammatory papules or papulopustules which slowly enlarge and crust over. As the disease progresses, variously-sized, irregularly-shaped, elevated

patches are gradually formed by the enlargement of the primary lesions and frequently by the addition of new ones about their periphery. These patches are covered with crusts beneath which is a moist papillomatous surface, and are surrounded by a characteristic border, violaceous in color and studded with miliary abscesses which appear as yellow points, and in the pus from which blastomycetes may be demonstrated, often in pure culture (Figs. 113 and 114). Occasionally the patches are dry, with a wart-like surface, resembling closely the patches of verrucose tuberculosis of the skin. Ulceration of a rather superficial character commonly occurs in the patches, which may slowly extend, or after a time may undergo spontaneous healing, leaving uneven scars.

When the cutaneous disease is the sequel of a systemic infection, irregular ulcers appear in the skin which begin as subcutaneous abscesses. The extent of the disease varies considerably. Although there may be but a single patch, there are usually several, and exceptionally there may be many scattered about over the face and extremities, some of them occupying a large surface. In secondary blastomycosis there may be many ulcers and abscesses scattered over the greater portion of the body.

Fig. 114.—Blastomycosis cutis.

The patient's general health, as a rule, remains unimpaired, except in the infrequent cases in which systemic infection accompanies or follows the cutaneous disease.

The course of the malady is slow and irregular. As a rule the

patches grow very slowly, months elapsing before they reach any considerable size.

Etiology and Pathology.—Blastomycosis occurs far more frequently in males than in females, quite three-fourths of the reported cases having been in men. One-half of all the cases have been in individuals over forty years of age, but it is by no means confined to this period; Kessler has reported a case in an infant eight months old, the youngest yet observed.

The direct cause is a fungus belonging to the yeasts, the Blastomyces. In a certain small proportion of cases a traumatism of some kind seems to have preceded the infection, and it is altogether likely that a solution of continuity in the skin, either the result of injury or perhaps some precedent inflammatory affection, is necessary as a port of entry for the fungus, except in those cases in which infection of the skin follows systemic infection.

FIG. 115

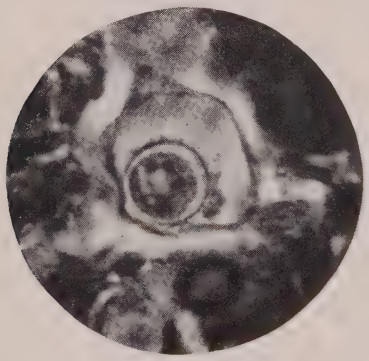


FIG. 116

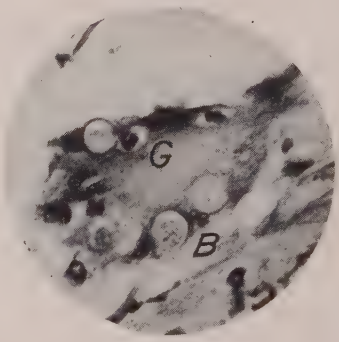


FIG. 115.—Blastomycosis cutis. Blastomyces.
FIG. 116.—Blastomycosis cutis. *B*, blastomycetes in *G*, giant-cell.

The blastomyces is a round or oval cell (Fig. 115) varying from ten to twenty microns in diameter, with a double-contoured wall, within which is a granular protoplasm separated from the inner wall by a narrow space, and frequently containing a vacuole. It is found between the cells of the epidermis, in miliary abscesses, and in giant-cells (Fig. 116) singly, in pairs usually of unequal size, or less frequently in aggregations containing ten to twenty without any special arrangement. Budding forms are frequently observed, but mycelia have not been found in the tissues, although produced in cultures. It grows readily upon a variety of media, and on glycerin-agar produces white cultures with aërial hyphæ. In the tissues reproduction takes place by budding, but in cultures, under certain conditions, reproduction by sporulation may also occur. The number of organisms present varies greatly; at times they are very abundant and are readily found, at others a long search may be necessary to discover them. Owing to their comparatively large size, they are usually readily demonstrated

either in stained sections, or in the pus obtained from the minute abscesses about the borders of the patch in which they are apt to be found in pure culture. In unstained sections and in pus they are easily demonstrated by placing these in a strong solution of potassium hydroxide, or in equal parts of glycerin and liquor potassæ underneath a cover. The histological changes are marked and resemble closely those which occur in tuberculosis verrucosa cutis (Fig. 117). The horny layer of the epidermis is in places completely lost, in others

Fig. 117.—Blastomycosis cutis. Enormous elongation of the interpapillary prolongations of the rete mucosum. *m*. Miliary abscess. Low power.

greatly thickened, especially between the papillary elevations. The most striking alterations are found in the rete mucosum, which is enormously overgrown, sending irregularly-shaped, branching processes of epithelial cells downward into the corium, and scattered throughout the hyperplastic rete are miliary abscesses containing numerous polymorphonuclear leucocytes, loose epithelium in all stages of degeneration, and a varying number of blastomycetes. The cells of the rete are decidedly increased in size, and their prickles are unusually prominent, probably owing chiefly to the increased width of

the intercellular spaces. Within and between the cells are numerous polymorphonuclear leucocytes, and scattered here and there in the intercellular spaces are blastomycetes. In the corium are marked signs of inflammation, especially noticeable in the upper portion. There is an abundant cellular exudate composed of polymorphonuclear leucocytes, small lymphocytes, plasma cells, a variable number of "mastzellen," and giant-cells. Here and there are likewise miliary abscesses similar to those in the epidermis, containing a variable number of blastomycetes.

Diagnosis.—The affection for which blastomycosis is most likely to be mistaken is verrucose tuberculosis of the skin, the resemblance between these two being frequently so close that a differential diagnosis from the clinical symptoms alone is often well-nigh, if not altogether, impossible. The differentiation of the two must in many cases depend upon demonstrating the presence or absence of the blastomycetes in the pus and tissues. At times it may be confounded with lupus vulgaris, but the characteristic violaceous border containing miliary abscesses in the pus from which the organism is usually found, will serve to differentiate these without much difficulty.

It may be mistaken for syphilis, particularly for the late ulcerative forms, but its comparatively slow course, the usual absence of any tendency to a circular or crescentic arrangement of the patches, which is so common in syphilis, the presence of the blastomycetes in the discharge, and the Wassermann reaction, usually render the differential diagnosis a comparatively easy and certain one.

Since the blastomyces is a comparatively large organism and one very easily recognized, failure to find it in any given case must always throw doubt upon the diagnosis.

Treatment.—When there are but one or two small patches favorably situated, they may be excised; if this is carefully done, going somewhat wide of the visible disease, recurrences are not likely. When, however, the patches are of considerable size and multiple, making excision impracticable, thorough curettement followed by the application of tincture of iodine should be employed, together with the internal administration of large doses of iodide of potassium. Large doses of the iodides usually produce a marked improvement in the disease, especially at first, but a complete cure is rarely if ever obtained by the use of the drug alone; improvement ceases after a time, remnants of the patches remain indefinitely and a recrudescence begins immediately upon its suspension. The X-ray has proved of benefit, especially when used in conjunction with intensive iodide treatment.

Prognosis.—The prognosis as to an ultimate cure in cases of moderate extent and duration is favorable, judicious treatment being usually followed by cure. In systemic blastomycosis the prognosis is exceedingly grave, a fatal termination being the rule.

SPOROTRICHOSIS

Definition.—A chronic infectious disease due to several varieties of a vegetable organism, the *sporotrichum,* characterized by cutaneous and subcutaneous nodules, abscesses, ulcers and sinuses.

The mycotic character of certain forms of chronic subcutaneous abscess was first pointed out by Schenk, in 1898, who found in the contents of such abscesses a fungus belonging to the *sporotricha.* A little later Hektoen and Perkins, in America, and De Beurmann, in France, confirmed Schenk's finding. The last-named has been especially active in the study of the malady, and much of our present knowledge of its etiology and pathology is due to his work.

Symptoms.—The disease usually begins with the appearance of small, hard, painless subcutaneous nodules, which are at first deeply seated so that they are perceptible to touch only, producing no visible elevation of the skin, but as they slowly enlarge visible tumors of variable size are produced. After a period varying from four to six or eight weeks, these soften and may then remain for an indeterminate period as soft fluctuating tumors, or what is less frequent, they may open and discharge a viscous purulent fluid, leaving fistulous openings. The number of such lesions varies from a single one to as many as thirty or forty scattered about without any definite arrangement over the trunk and extremities. Occasionally large abscesses may form, as in a case observed by Dor, in which as much as 500 c.c. of pus were evacuated from a single lesion.

Less frequently the disease begins at the site of an injury, often trivial, on the finger or other portion of the hand, with the appearance of a sluggish ulcer or small, rather firm nodule which after a time is followed by an indolent lymphangitis extending up the forearm, small firm nodules appearing along the course of the lymphatics which are swollen and feel like knotted cords beneath the skin, which is usually somewhat reddened, or exceptionally, unchanged in appearance. After a variable period, usually some weeks, the nodules soften. They may then remain as soft tumors varying in size from that of a hazel-nut to a walnut or even much larger, or they may ulcerate, leaving fistulæ or open ulcers discharging a seropurulent fluid. Occasionally after a period of some months the unopened tumors undergo involution, leaving permanent scars.

When the lesions open spontaneously, or are opened by incision, leaving fistulæ or ulcers, papillomatous masses of granulation tissue may form about the fistulous openings or on the bottom of the ulcers. In rare instances the nodules are situated within the derma, and occasionally, as the result of a secondary infection with the sporothrix, vesicles and papulo-vesicles develop in the epidermis about the fistulous openings.

The buccal and pharyngeal mucous membranes, as well as the viscera, may be attacked, although these are only rarely invaded.

Constitutional symptoms are absent, the patient's general health

not being affected even in cases in which the malady has lasted for a considerable time.

The course of the affection is a very chronic one; new lesion appear from time to time, while the old ones show but very little change from month to month, although occasionally, as has already been noted, spontaneous healing may occur in certain of them.

Etiology and Pathology.—Sporotrichosis is a mycosis due to a fungus, the sporotrichum, of which three varieties have been identified, viz., S. Schenki, S. Beurmanni, and S. indicum. It is apparently much more frequent in France and the United States than elsewhere, but has been found in various other parts of the world, such as South America, Ceylon, etc. The fungus is rarely discoverable in the tissues, but may be readily demonstrated in the pus obtained from the lesions by cultivation on various media. Cultures succeed best on Sabouraud's peptone-glucose agar upon which the organism forms round white colonies with a somewhat elevated surface covered with fine irregular convolutions, which after a time (twenty days) become brown. In a small percentage of cases a wound has served as the starting-point of the infection, but as a rule, the mode and place of entrance of the fungus are not discoverable. The disease has been observed in the horse and the dog, and probably these domestic animals, occasionally at least, serve as the carriers of the contagion to man.

The fungus consists of mycelial threads and spores. The former are long, straight, or slightly curved, occasionally branched, and about two microns in diameter; the latter are oval or round, five to six microns in diameter, brown in color, and are arranged around the mycelium as a sheath, or in small groups.

The changes in the tissues which result from the invasion of the fungus are confined largely to the deeper portions of the corium. The centre of the lesion is occupied by a necrotic area in which all cell-elements and the collagen and elastic tissues have wholly or in part, disappeared. This necrotic area is surrounded by a narrow zone of proliferating connective-tissue cells and polymorphonuclear leucocytes, while the periphery is composed of numerous lymphocytes, plasma cells, proliferating connective-tissue cells, and a variable number of giant-cells. The papillary layer of the corium shows a moderate round-cell exudate principally about the vessels. In the epidermis there is moderate proliferation of the cells of the rete with intercellular œdema.

Diagnosis.—The lesions of sporotrichosis frequently bear a great resemblance to the gummata of syphilitic and tuberculous origin. From syphilis they are to be distinguished by their usually greater number, by their more rapid evolution, and by the usual absence of any tendency to spontaneous ulceration. When ulceration does occur the ulcers lack the circular or serpiginous outline so often present in the syphilitic lesions. Tuberculous gummata are usually much slower in their evolution, and ulceration occurs sooner or later, the ulcers

having irregular, undermined livid borders. In doubtful cases cultures and animal inoculations should be resorted to. An indolent lymphangitis of the forearms should always arouse the suspicion of a possible sporotrichosic infection, especially when there is a history of a precedent injury of the hand.

Treatment.—The softened lesions should not be incised unless they contain large quantities of fluid, since, according to De Beurmann, ulceration, in most cases, follows incision. Iodide of potassium, given in considerable doses, usually produces speedy improvement, and eventually a cure; the administration of this drug should be continued some time after all the lesions have disappeared to prevent relapses. Open lesions, fistulæ and ulcers, should be treated locally with solutions of iodide of potassium and iodine, Lugol's solution, diluted, answering well.

ACTINOMYCOSIS

Synonyms.—Lumpy jaw; Fr., Actinomycose; Ger., Aktinomykose.

Definition.—An infectious disease of the skin and viscera due to the Actinomyces, or ray fungus.

The first published account of this affection was by Lebert, in 1848, although von Langenbeck had found the yellow granules peculiar to it in the pus from a case of vertebral caries in 1845. Its infectious character was first established by Bollinger, in 1876, and the name actinomyces was given the fungus by Harz, to whom Bollinger had submitted it for examination. Human actinomycosis was first described by Israel, and its identity with the bovine form was established by Ponfick shortly after.

Symptoms.—Actinomycosis, as a primary affection of the skin, is decidedly infrequent. In the great majority of cases the cutaneous affection is secondary to infection of the deeper parts and the viscera. The most frequent site of cutaneous actinomycosis is the face and neck, especially in the region of the lower jaw, where infection takes place most frequently through the buccal cavity, or often by way of a carious tooth.

The primary form begins with the appearance of one or more firm nodules deeply imbedded in the skin, which at first are a bright red, but later become a dusky-red or slate-color. After a variable period, these nodules, which vary in size from that of a pea to a nut, soften, open and discharge a purulent or sero-purulent fluid containing numbers of yellow or grayish-yellow granules, small masses of the ray fungus. The number of lesions present varies considerably: there may be but a single one, usually there are several, and there may be a considerable number forming a bluish-red infiltrated plaque with bosselated or rugous surface over which are scattered variously sized openings, many of which are connected with sinuses traversing the plaque and extending into the subcutaneous tissues. Raingeard has described peculiar macular plaques of a deep-red color with circumscribed borders

which when present usually coexist with the nodular and ulcerative lesions, but which may be present a considerable time as the only symptom of the infection. As a rule, little or no pain attends the evolution of the disease so long as it is confined to the skin; when, however, the deeper parts are invaded with the formation of abscesses as the result of secondary infection severe pain may be present. Not infrequently with the opening of the nodules ulceration takes place, and ulcers of varying extent and depth may be formed, resembling those which occur in tuberculous and syphilitic gummata, or they may present a fungating appearance, their surfaces being covered with papillomatous masses. When the cutaneous affection is secondary to a visceral or other deep-seated infection, as is most frequently the case, there is at first an ill-defined, rather deep infiltration of the subcutaneous tissues and the skin with œdema; the skin becomes red or bluish-red, softening takes place in one or more circumscribed areas over which the skin becomes thin and eventually gives way, forming ulcers or fistulous openings which communicate by sinuses with the primary focus.

As a rule the neighboring lymphatic glands show no alteration; but swelling of these and inflammation may occur, usually as the result of secondary infection with some one of the pyogenic microörganisms.

The course of the disease is usually slow, continuing for months or not infrequently for several years, new foci of infection appearing in adjacent parts, so that eventually considerable areas are involved. Exceptionally it runs an acute course, beginning somewhat suddenly with redness and swelling and other symptoms of an acute phlegmonous inflammation, the skin softens and openings form from which escapes pus containing the usual small granules of the ray fungus, and after a comparatively short course, lasting from some weeks to two or three months, recovery takes place with more or less scarring.

Etiology and Pathology.—Actinomycosis is most common between the ages of twenty and forty, although cases have been observed in children. It is considerably more than twice as frequent in men as in women, without doubt because of the much greater exposure to infection of the former through their occupations. It is much more common, indeed is found almost exclusively, in dwellers in the rural districts.

Its direct cause is the actinomyces or ray fungus, infection taking place through abrasions of the skin, by direct contact, or, what is much more frequent, through the buccal mucous membranes, the mucous membranes of the air passages, or of the gastro-intestinal canal.

The yellow granules found in the discharge which escapes from the openings in the skin are small spheroidal masses of the fungus, and consist of a central close network of fine threads from which radiate numbers of mycelia dividing dichotomously and terminating in thick, club-like ends, the whole forming mulberry- or rosette-like masses (Fig. 118). Quite frequently the clubs are divided transversely into

several segments; they exhibit great variety in shape and arrangement. Round and oval spores are also present. The Gram method of staining, followed by a weak solution of eosine, is one of the most convenient and satisfactory methods of staining the organism.

Cultivation of the fungus on various media succeeds readily. On glycerin-agar it produces colonies which at first are white and shining, but later, usually in a week or ten days, become a bright yellow. The actinomyces exists as a saprophyte upon grains, hay, straw, and other vegetable substances, whence it is transmitted to horses and cattle, and from these to man. There is some evidence that it may be transmitted from one individual to another, as from husband to wife.

The histological changes produced by the infection are characteristic of the infectious granulomata. The fungus lies in the midst of an amorphous granular mass which represents an area of complete cellular

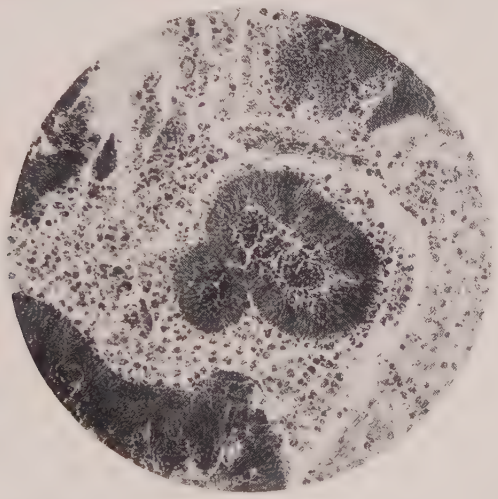


FIG. 118.—Actinomycosis. (Section from collection of Professor Allen J. Smith.)

degeneration, and about this is a zone of plasma cells the inner layers of which show more or less degenerative changes, and outside this zone is a more or less abundant exudate of lymphoid cells. A few giant-cells, together with "mastzellen," are likewise present. According to Unna the suppuration, which is one of the results of the infection, is not due to a secondary infection with the ordinary pus-forming organisms, but is the direct effect of the ray fungus which he regards as a pyogenic organism.

Diagnosis.—Actinomycosis is most likely to be mistaken for tuberculosis or syphilis, especially for tuberculous and syphilitic gummata. From tuberculous gummata it is to be distinguished by the age of the patient, usually an adult, and the absence of glandular enlargement. The slow progress of the disease, the presence of variously sized nodules which soften and discharge a thin pus in which are present

small yellow granules, and the existence of sinuses distinguish it from syphilis. Much stress is laid by some French authors, particularly Monestié, upon the peculiar slate-color which the lesions assume, as a diagnostic symptom, but in the last analysis the definite differential diagnosis must depend upon the demonstration of the ray fungus in the discharge, or in the tissues.

Prognosis.—The prognosis of primary actinomycosis of the skin is always favorable, if the true nature of the affection is recognized sufficiently early. In neglected cases, or in those in which a correct diagnosis has not been made and proper treatment in consequence has not been pursued, the duration may be long, and the deeper parts may eventually be involved, with serious results. The prognosis of secondary actinomycosis is essentially that of the primary lesions; when these involve important organs the outlook is grave.

Treatment.—The treatment should be both local and constitutional. The former is strictly surgical: sinuses should be laid open and curetted, abscess evacuated, their walls curetted, and afterwards painted with tincture of iodine, or covered with lint wet with bichloride solution, 1:2000. When the diseased parts are favorably situated for such procedure, they may be completely removed. Rydygier reports two cases successfully treated by parenchymatous injections of a one per cent. solution of one of the iodides, the iodide of sodium being preferable.

Iodide of potassium should be given internally in considerable doses, since it has been demonstrated that this drug has an almost specific effect upon the disease in some cases. While in most cases it exerts a decidedly favorable effect, especially in recent cases and in those in which secondary infection has not yet taken place, it sometimes fails, and reliance must then be placed upon the surgical treatment.

ANTHRAX

Synonyms.—Pustula maligna; Splenic fever; Wool-sorter's disease; Fr., Charbon; Ger., Milzbrand.

Definition.—An acute infectious disease derived from animals suffering from splenic fever, due to a specific organism, the *bacillus anthracis,* distinguished by carbuncle-like inflammation of the skin.

Symptoms.—After an incubation period varying from two or three days to a week, a small red spot appears at the site of infection accompanied by itching and burning, which speedily becomes a red papule on the summit of which a vesicle or vesico-pustule develops in the course of some hours. This vesicle, usually broken by scratching or ruptured spontaneously, dries into a blackish crust which is somewhat depressed and surrounded by a ring of small vesicles. Swelling is usually marked and the neighboring lymphatics and glands are inflamed, red lines extending from the crust marking the course of the former. For the first two or three days the affection remains a local one, but with the increase in the local symptoms constitutional symp-

toms of general infection appear; there is some elevation of temperature, sometimes considerable, headache, nausea, delirium and diarrhœa, and after from six to eight days, or earlier in severe cases, the patient dies, frequently with symptoms of collapse. In the cases which pursue a favorable course the constitutional symptoms are usually mild, the eschar is cast off by suppuration and recovery takes place at the end of from ten days to two weeks.

There is usually but a single lesion, but exceptionally there may be two or more, and it is almost invariably situated upon some uncovered part of the body, in the great majority of cases somewhere upon the head or face. When it is situated upon an extremity the swelling may occupy the entire limb and there is frequently an extensive lymphangitis.

Instead of beginning with a vesicopustular lesion, such as has just been described, the first symptom may be a marked local œdema (malignant œdema) situated in most cases in the face, particularly on the lids. The swelling is extensive and firm, the skin red or livid, and vesicles and blebs, frequently filled with bloody serum, appear on the œdematous area. In these cases symptoms of general infection usually appear early, are commonly of a grave character and are usually followed by a fatal termination.

Etiology and Pathology.—The malady is seen almost exclusively in those who come into contact with herbivorous animals or products derived from them—in butchers, veterinarians, farmers, tanners, and wool-sorters, and it is therefore practically confined to men. The immediate cause is the *bacillus anthracis,* discovered about the same time by Pollender and Davaine, the latter demonstrating its causal relationship to the affection. This organism is a rod-shaped bacillus, one to one and a half microns in diameter and from five to twenty microns long, which grows readily on a variety of media, forming long filaments frequently containing spores. It is present in enormous numbers in the pustule and surrounding skin and in the blood

The anthrax pustule is the product of a serofibrinous inflammation which rapidly leads to necrosis of the skin. In a fresh nodule situated upon the lip Unna found great numbers of bacilli at the level of the subpapillary vascular network extending upward into the papillæ and the epidermis. A distinctive feature was a fibrinous network following the collagenous fibres of the corium and filling the lymphatics and veins; and there was likewise a peculiar œdema of the papillary body with consequent formation of vesicles.

Diagnosis.—The pustule of anthrax is to be distinguished from carbuncle, the initial lesion of syphilis and from poisoned wounds. The patient's occupation, in most cases one which brings him into contact with cattle or horses or with hides, hair, or wool; the black eschar surrounded by a ring of vesicles; the extensive œdema and the constitutional symptoms, are features which, when occurring conjointly, usually suffice to establish the diagnosis. Owing to their comparatively large

size and great numbers, the bacilli are usually readily demonstrated microscopically in the fluid of the lesion.

Prognosis.—The prognosis is always serious, death occurring in from ten to twenty per cent. of the cases. It varies considerably according to the seat of the lesion, being most unfavorable when the head or face is attacked and least so when it is situated upon the lower extremity (Nasorow, quoted by Frank, Mraček's Handbook). In the cases which begin with a local œdema, or in those with marked constitutional symptoms, death usually follows.

Treatment.—Early excision of the pustule should be practised, going wide of the lesion, and dressing the resulting wound with some antiseptic, such as bichloride of mercury; or it may be destroyed with the thermocautery. Free incision, with the subsequent application of pure carbolic acid, has also been employed for the destruction of the pustule. Injection of tincture of iodine, or of five per cent. solution of carbolic acid, made into the pustule and the surrounding tissues has been followed by favorable results. Such local measures, however, are chiefly of use in the early stages before a general infection has taken place. The serum prepared by Sclavo has been successfully employed in a considerable number of cases, especially in Italy and England. Quite recently Fortineau, having demonstrated a marked antagonism between the bacillus pyocyaneus and the bacillus anthracis, has employed injections of the former with favorable results. Internally, sulphite of soda, which has been successfully employed in the treatment of splenic fever in cattle, should be given in liberal doses along with quinine. Stimulants should be given when symptoms of cardiac failure or collapse appear.

EQUINIA

Synonyms.—Glanders; Farcy; Fr., Morve; Ger., Rotz.

Definition.—A contagious and inoculable disease derived from the horse or ass, running an acute or chronic course, characterized by pronounced constitutional symptoms and inflammatory and ulcerative lesions situated in the skin and nasal mucous membranes, due to a specific organism, the *bacillus mallei*.

Symptoms.—A period of incubation, usually of about five days' duration, but in exceptional cases lasting from two to three weeks, precedes the appearance of the affection. The early symptoms present nothing characteristic: these are headache, malaise, pains in the joints and muscles and occasionally nausea. When infection has taken place through some wound or abrasion the site of the inoculation becomes red and swollen, the wound enlarges, becoming a spreading ulcer discharging a purulent offensive fluid, and the neighboring lymphatics and glands become inflamed and swollen. Sometimes within a few days, at other times only after two or three weeks, dark-red spots appear upon the skin which become papules, then pustules, and finally ulcers. Through the coalescence of adjacent lesions, serpiginous ulcers covered with necrotic sloughs are formed which when situated upon the face

may lead to extensive mutilation. Abscesses involving the deeper tissues form which, when opened surgically or spontaneously, give rise to deep ulcers, laying bare tendon and bone. The lymphatic vessels, not only in the neighborhood of the ulcerating lesions, but elsewhere present nodular swellings the so-called "farcy buds," which ulcerate and discharge.

The nasal mucous membrane becomes inflamed and a thin viscid mucus escapes from the nostrils. Later ulceration occurs, especially over the vomer and the discharge becomes thick, purulent, bloody and offensive; the nose is red and swollen and painful, the redness extending to the adjacent parts of the forehead and cheeks. The nasal symptoms usually occur early, especially in the acute variety, but they may be considerably delayed and in the chronic form are altogether absent in about one-half the cases.

With the progress of the malady the constitutional symptoms become more pronounced and frequently grave; the temperature is high, severe chills occur followed by profuse sweats, diarrhœa appears, the patient falls into a comatose state and death follows at the end of two or three weeks, or earlier.

In the chronic form the constitutional symptoms are less marked and remissions occur from time to time in which the disease is comparatively quiescent. The skin lesions are usually less numerous, but do not differ from those present in the acute form, and, as already observed, symptoms referable to the nasal mucous membrane are absent in a considerable proportion of cases (about fifty per cent.). Recovery may take place after a period varying from some months to several years, or the patient may eventually succumb. Not infrequently acute symptoms suddenly appear; the temperature becomes high, abscesses form, the patient becomes comatose or delirious, and death quickly follows.

Etiology and Pathology.—The malady is in most cases contracted by direct contact with a diseased horse, ass or mule, but the infection may arise indirectly through clothing soiled with discharge from the nose or from ulcerating lesions. The direct agent is an organism, the *bacillus mallei,* discovered, in 1882, by Löffler and Schutz, which is present in the nasal discharge and in the pus of ulcerating lesions on the skin. From cultures of this organism an extract may be obtained, *mallein,* which, when injected hypodermatically in animals with glanders, produces a reaction resembling that which follows the injection of tuberculin in tuberculous subjects, and which may be employed for diagnostic purposes.

In the early stages of the glanders lesion there is a more or less abundant cellular exudate composed of mono- and poly-nuclear leucocytes with thrombosis of the capillaries which are more or less completely occluded by greatly swollen endothelium and fibrin. A characteristic feature is the early and extensive fragmentation of nuclei which, although not peculiar to glanders, is much more extensive than in other

maladies. In the perivascular areas of necrosis there are great numbers of bacilli without any definite arrangement. In the epidermis there is marked dilatation of the intercellular spaces and reticular degeneration of the epithelial cells; according to Unna, bacilli are not present in this region.

Diagnosis.—The diagnosis of glanders in the human subject is beset with difficulties. The most satisfactory method is the demonstration of the presence of the *bacillus mallei* in the nasal discharge or in the pus from ulcers, either by the microscope or by culture. The method of Strauss is also of much value. This consists in the intraperitoneal injection of cultures or pus from a lesion into a male guinea-pig; should the *bacillus mallei* be present in the suspected material, swelling and inflammation of the testicle will occur in two to four days. Hypodermatic injections of *mallein* may likewise be cautiously employed, as in cattle.

Prognosis.—The prognosis is always grave. In acute cases death almost invariably occurs in the course of from three to six weeks and not infrequently earlier, even before the cutaneous symptoms have appeared. In the chronic form recovery takes place in about one-half the cases.

Treatment.—There is no specific remedy. Mercurial inunctions have been employed with asserted curative effect by Gold, but the experience of others has failed to confirm the usefulness of this treatment. Monneret and Andral recommend the iodide of potassium (Bodin). When possible the initial lesion should be destroyed by the actual cautery, especially if seen early, and the same agent may be used to prevent the spread of ulcers. In chronic cases ulcerating lesions should be treated with antiseptics, and quinine, iron, strychnia and other remedies of a like kind be given along with abundant nourishment. Careful trial may also be made of hypodermatic injections of *mallein,* favorable results have been reported from its use.

MYCETOMA

Synonyms.—Madura foot; Fungus foot of India; Podelcoma; Fr., Mycetome, Pied de Madure; Ger., Madurafuss.

Definition.—A mycotic disease endemic in certain parts of India, and occurring sporadically in various other parts of the world, attacking chiefly the feet, occasionally the hands, and in rare instances other parts of the body.

Although the affection was mentioned as early as 1712 by Kaempfer, it was first accurately described by Godfrey of Madras in 1843. Balingall suggested its parasitic nature in 1855, but Vandyke Carter was the first to call attention, in 1860, to the presence of fungus in the discharge which comes from the diseased parts; and it is to this author that we owe much of our knowledge of the malady. Among recent authors especial mention must be made of Brumpt, who has made detailed studies of the various fungi found in it.

Symptoms.—In most cases, but not invariably, the disease begins upon the sole, with the appearance of one or more firm, painless nodular swellings, which after a time soften and discharge a peculiar oily purulent fluid in which are contained yellowish or grayish granules which have been likened to fish-roe, or black grains resembling "coarse gunpowder"; quite exceptionally these granules are pink or red. When once the nodules have softened and opened they do not close but continue to discharge; and new swellings appear from time to time, so that eventually the number of these fistulous openings is considerable. As the disease progresses the foot enlarges, the sole becomes swollen, so that it is no longer concave but convex, the toes are spread apart; and the whole member in time becomes a lumpy, shapeless mass, while the muscles of the leg are markedly atrophied from disuse. Occasionally in long-standing cases the tibia may be invaded, or when the hand is the seat of the disease, the bones of the forearm.

The lymphatic glands as a rule are not affected, but inflammation of these may occur as the result of secondary infection with pyogenic organisms. Pain, as a rule, is not a prominent symptom.

The course of the disease is usually slow, reaching its full development only after a period of two or three years, and lasting from ten to twenty or more years, when the patient succumbs to exhaustion resulting from the long-continued drain upon his vitality, or dies with symptoms of sepsis.

Etiology and Pathology.—Although occurring sporadically in the Temperate Zone, mycetoma is essentially a disease of warm climates, and is seen far more frequently in certain parts of India, especially in Madura, hence one of the names by which it is known, Madura foot, than in any other part of the world. It is a disease of the rural districts, the inhabitants of the town escaping. It occurs much more frequently in men than in women, and is uncommon in children.

As was shown so long ago as 1860, by Vandyke Carter, it is a mycosis. Recent studies of the affection, especially those of Brumpt, have shown that it is not due to a single species of organism, but that a number of species of fungi are concerned in its production. According to Brumpt there are no less than eight varieties of the malady etiologically considered. Two of them are due to varieties of the Discomyces, two of them certainly to the Aspergillus, while the remaining four are likewise probably due to varieties of this latter fungus. According as one or the other of these fungi is present, the character of the granules in the discharge varies. In the so-called white varieties of the affection, the Discomyces is usually present, while in the black forms some variety of the Aspergillus is found. These fungi probably exist as saprophytes upon various plants and obtain entrance into the tissues of the foot through the abrasions or slight wounds which are so apt to be present in those who go barefoot. The early histological changes are those usually found in the infectious granulomata—areas of granular cell-degeneration surrounded by plasma cells and leucocytes with a

varying number of giant-cells and "mastzellen." In the advanced stages all the tissues of the foot are fused together into a grayish or yellowish mass in which the various parts are no longer distinguishable; even the bones and finally the tendons and fascia disappear. The entire foot is riddled with variously sized cysts and sinuses lined with a smooth membrane and filled with a yellowish roe-like substance, or with black or brownish granular friable masses in which the microscope shows elements of the fungus.

Diagnosis.—The situation of the disease, in most cases upon the foot, the extensive swelling and deformity, the numerous sinuses from which are discharged the peculiar yellowish granules or black, gunpowder-like grains in which the fungus may be demonstrated microscopically, are features which make the diagnosis a comparatively easy one.

Prognosis.—The prognosis is unfavorable, as the malady when once established steadily progresses until all the tissues of the foot have been completely disorganized and the member rendered not only useless but a burden. After some years the patient succumbs to the continued drain upon his strength.

Treatment.—In its very earliest stages, when the disease is confined to a limited area, excision or its complete removal with the curette may check it, but when well-developed amputation of the foot or hand, at a point well removed from the disease, offers the only hope of cure.

ORIENTAL SORE

Synonyms.—Aleppo boil; Oriental boil; Delhi boil; Pendje sore; Biskra button; Fr., Bouton d'Alep; Clou de Biskra; Clou de Gafsa; Ger., Orientbeule.

Definition.—A chronic ulcerative disease, endemic in certain tropical and subtropical regions, particularly of the Orient, due to a specific organism, the *Leishmania tropica.*

This affection, first described about the middle of the eighteenth century by Russell as observed in Aleppo, was at one time regarded as confined to Syria and particularly to Aleppo, hence one of the names by which it is known, Aleppo boil. Later, however, it was found in other countries, in India, in Northern Africa, and in the Western Hemisphere in Brazil, Panama and Central America.

Symptoms.—The appearance of the disease is preceded by a period of incubation varying from a few days to several months. Nicolle found that in the experimentally produced disease in monkeys the incubation period varied from 16 to 166 days.

It begins at the site of inoculation as a small firm red itching papule. This papule enlarges, becomes scaly after some days, and later the scales are replaced by an adherent crust beneath which is an ulcer surrounded by an inflammatory areola. The ulcer slowly enlarges until in the course of some months it reaches a diameter of one to two inches. New ulcers occasionally arise in the immediate neighborhood

of the primary sore and by extension and coalescence with it may form an ulcer several inches in diameter. After a period varying from three months to a year or longer, healing begins, not uncommonly in the centre of the ulcer which still continues to extend at the periphery for a time. When healing is complete a depressed whitish cicatrix is left which when large may cause pronounced disfigurement by irregular contraction. On the other hand, the scarring which follows the ulcer may be insignificant.

Occasionally the primary papule persists for some months as a scaly nodule which, instead of undergoing ulceration, is gradually absorbed.

Usually there is but a single lesion, although two, three, or more are not uncommon, and exceptionally there may be many. They are

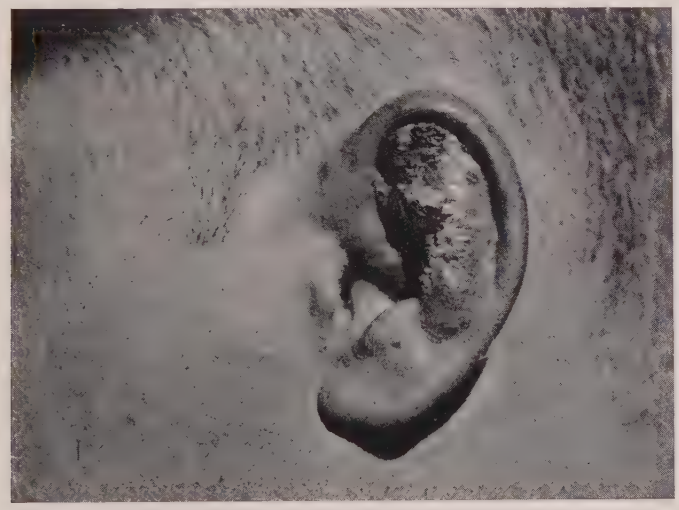


Fig. 119.—Oriental sore (Central America).

in most instances situated upon exposed parts, such as the hand, arm, feet and legs, and upon the face, this last being a favorite site in children. The palms, soles and scalp remain free and the trunk is only infrequently invaded. In cases observed in South America and in Panama, the ear is a common site (Darling). In a case recently under the author's observation, in which the malady was acquired in Central America, the lesion was situated in this region (Fig. 119).

While as a rule constitutional symptoms do not occur, Manson is of the opinion that there are exceptions to this rule and that fever may precede or accompany the appearance of the initial papule.

As a rule, to which, however, there are numerous exceptions, one attack confers immunity

Etiology.—It occurs in both sexes and at all ages, but is most common in the early years of life. Race is apparently without influence

upon its occurrence. It is contagious and inoculable, but the exact mode of infection is yet unknown. It may be communicated by direct contact with infected individuals or with soiled clothing, etc. It is quite probable that in a certain proportion of cases it is transmitted by the bites of insects.

The direct agent in its production is the organism discovered by Wright, in 1903, for which he proposed the name *Helcosoma tropicum,* but which was later called *Leishmania tropica.* This organism, found in the tissues of the ulcer, resembles very closely the Leishman bodies found in kala-azar, a chronic febrile disease endemic in parts of India. The presence of this organism in the tissues of the disease has been confirmed by a number of observers, and Nicolle has cultivated it and has reproduced the malady in monkeys by inoculation of pure cultures, thus definitely establishing its causal relationship to the affection.

Manson thinks it likely that infection occurs in two ways: Either the infecting organism is inoculated directly into the skin, or infection takes place indirectly through some insect which serves as an intermediate host in which the organism undergoes further development.

Pathology.—The chief histological alterations are found in the corium which is occupied by a cellular exudate, most abundant in the neighborhood of the blood-vessels. This exudate is made up of lymphoid, plasma and a few giant-cells, together with large mononuclear cells which Wright regards as endothelial, in the cytoplasm of which are numerous microörganisms. The changes in the epidermis are secondary to those in the corium and vary according to the age of the lesion. At times there is atrophy of the rete, at others it is much thicker than normal, sending branching processes down into the corium.

Diagnosis.—In countries where the malady is endemic the diagnosis is usually made without difficulty, but it is not always easy. In doubtful cases the organism should be looked for in smears or scrapings taken from the ulcer, since this is the most certain method of diagnosis and sometimes the only satisfactory one.

Treatment.—Cauterization or excision of the lesion has been advised, and if done early may cut short the disease. Quite recently the tartrate of antimony in one per cent. solution has been successfully employed intravenously, by Ferra in Brazil; five c.c. were given once a day for five successive days. DaSilva, likewise, reports success with this method of treatment.

ESPUNDIA

Under the name, Espundia, an unusually virulent form of Leishmaniasis has been described as occurring in Brazil, Peru and Paraguay. It begins with an initial ulcer resembling in some respects a chancre, on some exposed part of the body, which pursues an indolent course,

healing after a duration of some months. This lesion, after a variable period, is followed by destructive ulceration of the tongue and mucous membranes of the mouth and nose. The malady lasts for years and may produce extensive destruction of tissue followed by marked deformity, and in certain cases produces death. The Leishman bodies are found in small numbers in the ulcers.

FRAMBŒSIA

Synonyms.—Yaws; Fr., Pian; Ger., Beerschwam; Boubas (Brazil); Paranghi (Ceylon).

Definition.—An infectious and contagious disease endemic in the tropics, due to the *spirochæta pertenuis* (*treponema pertenue*) characterized by an eruption of papules and papillomatous nodules.

This affection was first described by Oviedo, in 1535, and was given the name framboesia by Sauvages, in the latter part of the eighteenth century (1761). It is essentially a tropical disease, prevailing extensively on the west coast of Africa, in the Islands of the South Pacific, in Ceylon, in the West Indies and in the tropical countries of South America. Although at the present time found only in the tropics, it is altogether likely that the malady which prevailed in Ireland in the latter part of the eighteenth and early part of the nineteenth centuries known as "button scurvy" was yaws.

Symptoms.—An incubation period varying from two to four weeks precedes the appearance of the characteristic eruption in the disease when acquired in the ordinary way. In cases, however, in which it has followed experimental inoculation the incubation period has been much shorter, varying from ten to twenty days (Paulet and Charlouis). During this period constitutional symptoms occur, such as fever, muscular and arthritic pains, gastric disturbances and diarrhœa. These may be so slight as to scarcely attract attention, or they may be well pronounced. The skin becomes dry, small, ill-defined, oval and irregular patches covered with fine branny scales appear, which may persist throughout the disease. These symptoms are followed by the primary or initial lesion at the site of inoculation.

The initial lesion, the existence of which is denied by some authors, begins as a papule which slowly enlarges and at the end of a week is covered with yellow cheesy material resembling sebum, which, after some days, dries into a yellow adherent crust beneath which is an ulcer with well-defined edges. This ulcer may heal in the course of two or three weeks, leaving a whitish cicatrix, or it may increase in size and persist as a papillomatous growth, the so-called "mother yaw," around which smaller lesions occasionally form. Instead of ulcerating, it may persist as a nodule, which after a time undergoes absorption, the skin over it scaling slightly. It may occur on any part of the body, but is most frequently seen upon exposed portions, such as the arms and hands, the lower extremities, the face in children, and in infants about the mouth. In women the breast is a frequent site,

particularly in the region of the nipple and areola. The genital region is less frequently affected.

From one to three months after the appearance of the primary lesion, a more or less generalized eruption of small conical papules occurs, usually preceded or accompanied by some elevation of temperature, with headache and pains in the muscles and joints. At first these papules are quite small, but they rapidly increase in size and at the end of a week their tops are covered with a yellow wax-like secretion which dries into yellow firmly adherent crusts beneath which is a red papillomatous surface covered with a viscid acid secretion, compared by Numa Rat to the cauliflower. Not all of the papules, however, undergo this development, many of them, without any increase in size after a number of weeks, disappear. The papules usually reach their complete development in about two weeks and then remain for some weeks longer without material change. The crusts then fall off, the nodules shrivel up and finally disappear, leaving more or less pigmented patches.

The number and size of the lesion vary greatly. The nodules when fully developed vary in size from that of a pea to a nut. There may be hundreds occupying all the regions of the body or there may be less than a dozen, sometimes not more than two or three, limited to one or two localities. When the lesions are numerous and closely aggregated they may form patches of considerable size, and about the mouth and anus they form ring-shaped papillomatous masses (*ringworm yaws*). Occasionally ulceration occurs, usually limited to the lesion itself, but sometimes extending to the surrounding skin, continuing under such circumstances for long periods. Lesions occur upon the sole of the foot and palm of the hand, and in the former region are usually quite painful, being compressed by the thick horny layer of the epidermis. Walking is painful and the patient adopts a peculiar crab-like gait (*crab yaws*). Occasionally the plantar lesions ulcerate, producing deep ulcers situated most frequently at the base of the great toe. Although more or less itching accompanies the eruption, the lesions themselves are as a rule painless, although Charlouis states that they are frequently painful when they first appear. The mucous membranes of the lips and nose may be invaded, but these are not commonly attacked. The matrix of the nails is occasionally inflamed and papillomatous lesions may develop about their roots. The hair is not affected, except in regions where ulceration occurs, in which event permanent alopecia may result, owing to destruction of the hair follicles.

In cases of ordinary severity the general health is but little affected, but when the malady occurs in broken-down subjects or in those improperly housed and fed or injudiciously treated, the general health may suffer to a marked degree.

The duration of yaws varies within wide limits. In healthy individuals an attack of moderate severity runs its course in about six weeks to two months, but in debilitated subjects or when the disease is severe it may continue for six to eight months or even one year, successive crops of eruption appearing from time to time.

As a sequel of the foregoing symptoms, ulcerative lesions following gumma-like infiltrations, serpiginous ulcers, periostitis, destructive ulceration of the mucous membranes of the nose and pharynx occur in a certain proportion of cases, constituting the tertiary stage of Numa Rat, Castellani and others. There is considerable difference of opinion, however, among equally experienced observers as to the nature of these lesions. While the above-mentioned authors regard them as a part of the yaws infection, others consider them the result of a concurrent syphilis or tuberculosis.

Etiology.—Yaws is a highly contagious affection. It may be transmitted by direct contact, provided there is a break in the continuity of the skin. Any abrasion, such as a scratch, may serve as the point of entry for the infection, which also frequently takes place through the medium of pre-existing ulcers, whatever their origin. There is also some evidence that it may be transmitted by the bites of insects, such as mosquitoes, etc. Heredity plays no part in its production. It occurs in both sexes, more frequently in men than in women, and is common in children, although infrequent before one year of age. In 1905, Castellani demonstrated the presence of an organism in yaws tissue resembling closely the spirochæta pallida of syphilis to which he gave the name *spirochæta pertenuis,* and this finding has since been confirmed by a number of other observers. There is little doubt that this organism is the direct cause of the malady.

Pathology.—The *spirochæta pertenuis* is decidedly more slender than the spirochæta pallida and varies in length from a few microns to eighteen or twenty (Castellani). It stains with difficulty but may be stained by the Leishman and Giemsa methods. Inoculation of this organism into monkeys produces lesions similar to those observed in man. Noguchi has succeeded in cultivating it, employing ascitic fluid as a culture-medium.

The histopathology of yaws is that of an infectious granuloma. The epidermis shows marked acanthosis with hyperkeratosis and pronounced down-growth of the interpapillary processes of the rete. The papillæ of the corium are increased in length in proportion to the increased length of the interpapillary prolongations. The corium is occupied by a diffuse cellular infiltration composed chiefly of plasma cells, with a few polymorphonuclear leucocytes. Unlike other varieties of granuloma, there are no large multinuclear cells nor giant-cells of the Langhans type. There is rarefaction of the collagen and of the elastic tissue in the region occupied by the exudate. Unlike the syphilitic granuloma there are no proliferative changes in the walls of the vessels and in the endothelium, histological features so characteristic of syphilis.

Diagnosis.—The disease for which it is most likely to be mistaken is syphilis. Indeed, it was formerly regarded by a number of authors, prominent among whom was Sir Jonathan Hutchinson, as nothing more than a modified form of that disease. The initial lesion, which is

usually extra-genital, never exhibits the induration characteristic of the initial lesion of syphilis. The eruption is quite uniform in character, whereas syphilitic eruptions are remarkably polymorphous. The yellow waxy crusts which cover the nodules are altogether unlike the crusting which occurs in pustular syphilitic lesions. Many of the lesions, if not most, in yaws are papillomatous in character, a form of lesion quite uncommon in syphilis. The mucous membranes so commonly the seat of syphilitic lesions are infrequently attacked in yaws and in the latter there is neither alopecia nor iritis. Itching is a common and frequently a well-marked symptom in yaws, but is rare in syphilis.

Prognosis.—Recovery usually takes place within from three to six months in cases of moderate severity occurring in those in good general health, but when severe and occurring in debilitated subjects the prognosis as to early recovery is unfavorable. The disease may last one or more years. Death is infrequent, and when it occurs is usually the result of septic complications.

Treatment.—Proper hygienic surroundings and abundance of good food and strict cleanliness of person and clothing are of great importance in the management of the malady. Mercury and the iodides exert a decidedly beneficial effect when judiciously employed. The most effective remedy, howver, is salvarsan or neosalvarsan, given in the usual dose either intravenously or intramuscularly, preferably the former. This remedy causes the rapid disappearance of the eruption in every stage of the disease. Ulcers should be cleansed frequently with antiseptic washes, such as the saturated solution of boric acid or an aqueous solution of mercuric bichloride, 1 to 2000.

In order to prevent the spread of the disease, contact with diseased individuals should be carefully avoided, soiled clothing and the dwelling of the patient should be thoroughly disinfected or burned.

VERRUGA PERUANA

Synonyms.—Peruvian wart; Carrion's disease; Oroya fever.

Definition.—An endemic disease confined to certain elevated valleys on the western slopes of the Andes in Peru, characterized by fever, marked anæmia and an eruption of nodules and papillomatous tumors situated upon the skin and mucous membranes.

This malady was first mentioned in European literature, in 1543, by Zarrate in his *History of Peru,* and was first medically described, in 1845, by Tschudi. Since then it has been extensively studied by Ordriozola, Escomel, and Yzquierdo and very recently by Strong.

Symptoms.—After an incubation period lasting from one to six weeks, the disease begins with constitutional symptoms of a more or less pronounced character. There is fever, frequently intermittent in character, the temperature ranging from 100° F. to 103° or 104° F. with severe muscular and arthritic pain. These symptoms are followed after some weeks or months by an eruption of small red papules

or vesicles which slowly increase in size and become papillomatous nodules and tumors varying in size from that of a small pea to a large nut or pigeon's egg. Subcutaneous nodules likewise occur over which the skin is freely movable. With the appearance of the eruption, which may appear in a single crop or in successive outbreaks, there is an abatement of the constitutional symptoms. The eruptive lesions, after reaching a certain size, are red, shining and elastic, and very vascular, bleeding readily, often spontaneously, or from scratching, so that many of them are covered with a red or blackish crust of dry blood. They are markedly affected by temperature, becoming turgid under the influence of heat and shrinking up when subjected to cold. The number of lesions present varies greatly. They may be quite limited in number or there may be scores and hundreds of them. The face and extremities are the sites of election, but the trunk may also be affected. The eruption is not confined to the skin, but occurs upon the conjunctiva, upon the mucous membranes of the lips, cheeks, pharynx, upon the gastro-intestinal mucosa and in the vagina.

The eruptive period varies from four to six months. The smaller lesions gradually shrivel up and disappear, leaving for a time a small pigmented spot. The large lesion and the subcutaneous nodules usually disappear by ulceration.

Etiology.—The malady is confined within comparatively limited geographical boundaries and within these boundaries is restricted to certain localities.

Neither age nor sex exerts any influence upon the occurrence of the affection. The weak and ill-nourished more readily fall victims to it than the strong and well-fed.

It is inoculable, as was conclusively demonstrated by the fatal experiment of Carrion, who lost his life after an experimental inoculation performed upon himself. The fact that it has been known to occur in individuals who have spent but a very short time, even so little as an hour or two, in regions in which it is endemic, suggests the possibility, if not the probability, that it is conveyed by the bite of some insect. Townsend would incubate a species of phlebotomus as the carrier of the infection. A number of organisms have been found in the blood and in the tissues of those affected, but the relationship of these to the disease has not yet been definitely determined.

Until quite recently Carrion's experiment was considered to have definitely determined the identity of verruga and Oroya fever, a grave febrile disorder prevailing in the regions in which the former is endemic, but quite recent studies have thrown considerable doubt upon the accuracy of this view. Strong, as the result of his studies in Peru, concludes that the two affections are distinct from one another, and due to different causes.

Pathology.—The microscopic changes in the lesions are such as are found in the infectious granulomata in general: The corium is occu-

pied by a diffuse cellular exudate composed of lymphoid, polymorphonuclear, and plasma cells. The lesions are markedly vascular, sometimes resembling in appearance angioma.

During the febrile stage preceding the eruption, rods resembling bacilli are present in the red blood-cells which disappear with the appearance of the cutaneous lesions.

Diagnosis.—The recognition of the disease during the febrile stage may be very difficult, and the diagnosis must frequently wait upon the appearance of the cutaneous symptoms.

Prognosis.—The disease is a serious one, the mortality varying from ten to forty per cent. The gravity of an attack is in direct proportion to the severity of the constitutional symptoms. With the appearance of the eruption the prognosis is materially improved.

Treatment.—When possible those stricken should be removed from the region in which the malady prevails, preferably to the seashore. The medicinal treatment consists in the administration of quinine and iron and stimulants when indicated. Very recently favorable results from the use of salvarsan have been reported.

GANGOSA

Synonym.—Rhinopharyngitis mutilans (Leys.)

Definition.—A disease endemic in certain tropical regions characterized by progressive destructive ulceration of the nasopharynx and adjacent parts.

This malady is found chiefly in the Philippine Islands, Fiji, the Caroline Islands, Guam, and to some extent in some of the islands of the West Indies, British Guiana and Panama. In Guam it is especially prevalent, it being estimated that from one to five per cent. of the entire population are affected.

Symptoms.—It begins with ulceration of the soft palate or pillars of the fauces, spreading thence to the hard palate and to the nasopharynx, producing extensive destruction of the soft parts, cartilage and bone. Extending through the nose to the nares, it sometimes completely destroys the cartilaginous septum and the bony structures, permitting the nose to sink in, or it may completely destroy it, usually sparing the adjacent part of the upper lip. It may extend upward through the lachrymal duct to the orbit, where it may destroy the eyeball. Less frequently it extends downward to the larynx, interfering more or less markedly with the functions of this organ.

While the progress of the affection is commonly slow, it may at times be quite rapid. A fulminating type occurs in children, which begins suddenly and is accompanied by extreme prostration, with marked swelling of the cervical lymphatic glands (Mink and McLean). These cases run a very rapid course, death occurring usually within forty-eight hours with symptoms of profound toxæmia. If the patient

survives, characteristic mutilation occurs and the disease pursues the ordinary course.

Constitutional symptoms as a rule are absent. Pain is not commonly a prominent symptom and the patient's general health is but little affected.

The course of the malady is a chronic one and is apt to be intermittent, periods of activity being followed by periods of quiescence. It usually lasts for years and produces at times extreme destruction with great deformity. Occasionally the ulceration terminates spontaneously before much mutilation has been produced.

Etiology and Pathology.—It is most frequent in the second and third decades of life. Sex is without influence upon its occurrence. It is confined to the natives of the regions in which it occurs, the only case in a European thus far observed being reported by Stitt. This case occurred in a man who had lived in Guam in intimate association with families in which the disease prevailed. The affection is probably contagious, although definite proof of this is still lacking.

There is but little doubt that it is a specific infection of some sort, but the infecting agent is still unknown. By some it is regarded as a form of syphilis, while others look upon it as a sequel of yaws or frambœsia.

Histologically it is a granuloma, resembling somewhat tuberculosis (Fordyce).

Diagnosis.—The diseases for which it may be mistaken are leprosy, lupus vulgaris, syphilis and yaws. From the two former it may be distinguished by its comparatively rapid course and the absence of the specific organism of these affections. It is much more likely to be mistaken for syphilis than any other disease, but the absence of other symptoms of this infection and the negative Wassermann reaction readily differentiate it.

Cases of the fulminating type resemble more or less diphtheria and Vincent's angina, but the absence of the Klebs-Loeffler bacillus of the former and of the bacillus of Vincent, present in the latter would exclude these affections.

Prognosis.—Except in the infrequent fulminating form, the malady involves no danger to life, but it may continue for years, producing extensive destruction of tissue in the nasopharynx and the face with extreme disfigurement.

Treatment.—There is no specific treatment for this disease. Caustics, such as nitrate of silver, phenol, chromic acid, are useful in limiting the spread of the ulceration. Mink and McLean regard tincture of iodine applied freely as the best local remedy. Antiseptic washes, such as the saturated solution of boric acid, or a 1:2000 solution of bichloride of mercury, should be freely applied. For the correction of the fetor which often accompanies the disease a one per cent. solution of permanganate of potash may be used. In the fulminating type of the affection supporting treatment is indicated.

GRANULOMA INGUINALE TROPICUM

Synonyms.—Groin ulceration; Ulcerating granuloma of the pudenda (Galloway).

Definition.—A chronic ulceration of the groin and pudenda occurring in tropical regions.

The first account of this affection was given by Conyers and Daniels, in 1896, who observed it in British Guiana in West Indian negroes. A similar disease has been observed in some parts of India, in Fiji and in South China (Manson). Quite recently its occurrence in negroes in the United States has been reported by Grindon.

Symptoms.—According to Conyers and Daniels, it begins as a small papule which enlarges until it becomes a nodule a half inch or more in diameter, with a smooth, pink, shining surface; this is soon excoriated or abraded and ulcerates. In men it begins on the penis, pubes or in the groin, in women usually upon the labia. The ulceration extends slowly along the groin where it forms an ulcerating furrow, spreads over the pubes, back over the perineum and around the anus. In women it spreads over the labia, the perineum and into the vagina, sometimes destroying the recto-vaginal septum. The borders of the ulcers are covered with vegetations, and there is usually a profuse watery discharge from the surface with a peculiarly offensive odor. As the ulceration extends, the parts first invaded cicatrize, so that after some time there is a large area of uneven pigmented scar-tissue with a serpiginous ulcerating border. The disease spreads slowly and lasts for a number of years. While it usually spreads by continuity, it may invade new regions by inoculation of opposed surfaces, as when it spreads from the scrotum or the vulva to the inner surface of the thigh.

Etiology and Pathology.—It occurs in both sexes but is somewhat more frequent in women than in men. It is most common between puberty and forty years of age. It especially affects negroes in the regions in which it prevails, but also occurs in other dark races and has been noted in a few instances in individuals of the white race. Manson thinks there is reason for believing it a venereal disease and Maitland believes it may be sometimes inoculated on a preëxisting venereal ulcer, such as an ulcerating bubo. Donovan (quoted by Manson) found in scrapings from the bottom of the ulcer, in cases seen in Madras, a short bacillus with rounded ends, measuring two microns by one micron, situated in large mononuclear cells, either scattered throughout their protoplasm or oftener, in clusters of eight or ten; the relationship of this organism to the disease has not yet been determined. Wise has reported the finding of spirochætæ resembling the Spirochæta refringens and the Spirochæta pallida in the ulcers. Histologically, the affection is a granuloma without special characteristics.

Diagnosis.—It is to be distinguished from tuberculosis and syphilitic ulceration. It differs from both tuberculosis and syphilis by its very slow progress, its limitation to the groin and pudenda, its extreme

chronicity and the absence of glandular involvement and of general symptoms even when it has lasted for years.

Prognosis and Treatment.—It is usually very rebellious to treatment, and as already noted, lasts for several years. The general health suffers but very little, even in long-standing cases.

Conyers and Daniels found phenol-camphor one of the best local applications, but it does not cure the ulcer. Mercury and the iodides have been tried without effect, and quite recently Choyce and MacCormac have used salvarsan without benefit. Very recently the X-ray has been found to give better results than any other form of treatment.

RHINOSCLEROMA

Definition.—A malignant new-growth characterized by nodules and plaques of cartilaginous hardness occupying the nose and adjacent parts.

This affection was first described by Hebra and Kaposi in 1870, their description of it being based upon 15 cases almost all of which were observed in the Vienna Clinic. It is found chiefly in Austria, Hungary and Southeastern Russia; next to these countries it is seen most frequent in Brazil. Scattered and infrequent cases have been observed in Italy, Switzerland, Belgium, Spain and the United States. In the last-named country all the cases with but two exceptions have occurred in foreign-born individuals.

Symptoms.—The disease begins with the appearance of discrete and confluent nodules and slightly elevated circumscribed plaques of cartilaginous hardness situated in the great majority of cases upon some portion of the nose. According to Wolkowitsch, 95 per cent. of the eighty-five cases collected by him began in the nasal fossæ. These nodules and plaques may be the color of the normal skin or brownish-red, are hard, glossy and smooth, with dilated capillaries coursing over their surface. They slowly enlarge, increasing the size and changing the shape of the nose, which is broadened and flattened. With the growth of the neoplasm the nasal openings are gradually encroached upon until in time they are so completely occluded that the patient can no longer breathe through them and is compelled to breathe through the mouth. In time the upper lip is involved; it becomes thick and misshapen. The naso-pharynx and even the larynx are in time implicated in the process. After a time fissuring occurs in the natural furrows about the nose and from these fissures a viscid fluid escapes which dries into yellowish crusts. Sometimes the growth is confined, for a time, at least, to the nasal mucosa and produces but little change in the external appearance of the nose. Although spontaneous pain is not present in the growth, pressure may produce severe pain persisting for some time. While the nose and adjacent parts are the most frequent site of the disease, it occurs also in other regions in exceptional cases; the soft palate, the pharynx and the larynx are oc-

casionally affected, and two cases have been reported in which the disease was situated in the auditory canal (Pick, Kaposi).

The course of the malady is extremely chronic, the growths slowly extending to the neighboring parts, and interfering seriously with respiration through closure of the nasal passages and occasional narrowing of the glottis. But little change occurs in the growth, when once established, although at times oozing followed by crusting takes place. Occasionally superficial excoriation is observed on the surface of the lesions, and in rare instances softening (Zeissl).

Etiology.—The disease affects both sexes alike; out of eighty-five cases collected by Wolkowitsch, forty-eight were men and thirty-seven women. The same author found the maximum frequency of the dis-

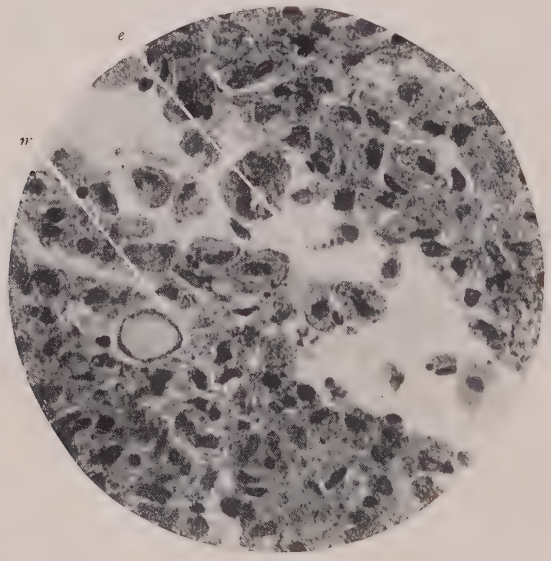


Fig. 120.—Rhinoscleroma. Large epithelioid cells, *e*, with a Mickulicz cell, *m*. In the latter, in properly stained sections, numerous bacilli are usually found.

ease to be between fourteen and thirty years of age. Nearly all the cases thus far observed have occurred in the very poor, but in those who apparently have been in good general health.

In 1882 Frisch discovered a bacillus in the tissues of the neoplasm which he believed to be the cause of the disease. This bacillus is a short rod from 1.5 to three microns long; it is surrounded by a capsule and resembles the pneumococcus of Friedlander. This organism is constantly present in the tissues of the neoplasm and has been successfully cultivated. Efforts at reproducing the disease, however, by inoculation of such cultures have thus far failed.

Pathology.—While the growth presents in a general way the features of a granuloma, it differs considerably from the ordinary granuloma in some of its details. In the early stages the corium is occupied

by numerous foci of cells which are for the most part plasma cells. Later peculiar large cells are present, some of which have undergone colloid degeneration, others contain vacuoles in which are numbers of bacilli enclosed in a gloea; these are the cells of Mikulicz and give to sections of the neoplasm a quite characteristic appearance (Fig. 120). Numerous bands of fibrous connective tissue are also present which give to the growth its peculiar hardness.

Diagnosis.—The peculiar cartilaginous firmness of the neoplasm and its situation upon the nose and adjacent parts is characteristic of the malady, making it readily recognizable in most cases. It may be mistaken for keloid, but this usually follows traumatism, and is found only in rare instances upon the nose. In the enlargement which occurs in rhinophyma the tissues are soft and vascular and frequently pitted with small scars, altogether unlike the hard smooth surface of rhinoscleroma.

Prognosis.—The affection is without influence upon the general health, but continues for years. Owing to the interference with respiration through narrowing of the nasal passages and the larynx, sleep is frequently greatly interfered with and the taking of food troublesome. In advanced cases, through closure of the glottis, death may occur from suffocation.

Treatment.—No method of treatment has yet been found which definitely checks the course of the disease, although the employment of the X-ray has recently been found to exercise a favorable influence upon it. Temporary relief to the embarrassed respiration may be obtained by the surgical removal of a part of the neoplasm, but it invariably recurs. The galvano-cautery may be employed for this purpose, or the curette. Lang observed improvement after injection of a solution of salicylic acid, one per cent., into the tumor, and Wolkowitsch after injections of carbolic acid, but other observers have not been so fortunate.

LUPUS ERYTHEMATOSUS

Synonyms.—Érythème centrifuge (Biett); Seborrhœa congestiva (Hebra); Lupus erythematodes; Ulerythema centrifugum (Unna); Fr., Lupus erythemateux (Plate XXI).

Definition.—A chronic, in rare instances acute, inflammatory disease characterized by circumscribed red or violaceous, variously sized patches situated in the face, much more frequently than elsewhere, followed by cicatricial atrophy.

This affection, first described by Biett under the name érythème centrifuge, later by Hebra as seborrhœa congestiva, was given the name by which it is generally known at present by Cazenave in 1851.

Symptoms.—The affection presents considerable variation in its symptoms and course. Kaposi, who has been followed by most authors, recognized two clinical varieties—a discoid, lupus erythematosus discoides, and a disseminate, lupus erythematosus disseminatus.

To these Croker added two others, a telangiectic and a nodular form. The several varieties are usually very much alike in the beginning, and are differentiated from one another chiefly by the course which they pursue later.

The most frequent variety is the discoid, which is situated in the great majority of cases upon the face and ears, considerably less frequently upon the scalp, and occasionally upon the hands and feet. It begins as pin-head to pea-sized, red, slightly elevated spots covered with a scanty thin scale which slowly, or at times quite rapidly, enlarge until they reach the size of a coin. When there are several adjacent patches they may coalesce to form patches half the size of the palm, and larger, often with crescentic or gyrate margins. After a variable period the central portion becomes somewhat depressed, atrophic, and whitish or bluish-white, while the margin remains more or less elevated, and red or violaceous in color. The surface of the

Fig. 121.—Lupus erythematosus. Mild type.

patches is covered with scanty grayish or yellowish adherent scales from the lower side of which small spine-like projections dip into the mouths of the follicles, which are noticeably dilated and many of which contain comedo-like plugs of horny epithelium.

When fully developed the disease presents a very characteristic appearance. The borders of the patches are marginate, more or less distinctly elevated and of a dusky-red or violaceous color, while the central portion is depressed and occupied by smooth or slightly scaly, bluish-white parchment-like scar-tissue. In a large proportion of cases of the discoid form the disease begins over the malar eminences and spreads thence to the cheeks and over the bridge of the nose, forming symmetrical patches which have been likened to a bat with outspread wings or to a butterfly; and on account of this fancied resemblance the disease is sometimes popularly known as the bat's-wing disease (French, Vespertillio), or the butterfly disease (German, Schmetterling, Figs.

121 and 122). A variable amount of infiltration is present. At times it is very slight, there being apparently little more than a marked erythema, either with or without scaling, as in the telangiectic variety described by Crocker, which occurs as smooth, bright to dusky-red circumscribed patches most frequently on the cheeks. On the other hand the infiltration may be considerable, the patches being quite thick with uneven nodular surface, resembling lupus vulgaris.

Decided subjective symptoms are rarely present; exceptionally, considerable itching and burning are complained of. The ears are frequently involved along with the face, where it occurs as ill-defined patches in the concha in which the follicles are markedly dilated and filled with comedo-like plugs. In long-standing cases the entire ear may eventually be involved, and the organ be reduced to its cartilaginous framework over which is stretched thin scaling scar-tissue in which

FIG. 122.—Lupus erythematosus.

ulceration occasionally occurs. On the scalp it produces round or irregularly shaped areas of baldness, the borders of which are somewhat elevated and scaling. Usually it is associated with patches upon non-hairy parts, such as the face, but occasionally it exists in this region alone. The loss of hair which results is permanent, the follicles being completely destroyed (Fig. 123).

Upon the hands and feet it occurs as small round and oval patches which present much the same features as those in the face, with which it is nearly always associated. It sometimes occurs as dull-red or bluish-red, smooth or slightly scaly, circumscribed patches, usually situated over the joints of the fingers, which resemble chilblains and which like these, are usually worse in winter and better in summer. This form, which is known as lupus pernio, or on account of its resemblance to chilblain, chilblain lupus, may also attack the ears and nose. In a certain small proportion of cases, vascular and trophic

symptoms resembling those of Raynaud's disease precede or accompany erythematous lupus of the hands and other regions. There are paroxysmal attacks of local asphyxia and local syncope affecting the terminal phalanges of the fingers and toes accompanied by pain and followed by necrosis of the tips of the fingers and of the toes; and in cases in which these symptoms have continued for some time, marked atrophy of the fingers with impairment of motion, sclerodactylia, may result.

The nutrition of the nails may be very much disturbed when the phalanges are attacked. They lose their lustre, their free edges are brittle and broken, and in exceptional cases the entire nail-plate is greatly distorted or almost completely destroyed.

The mucous membranes are occasionally attacked, usually coincidently with the skin, in rare instances, alone. It is not rare upon the

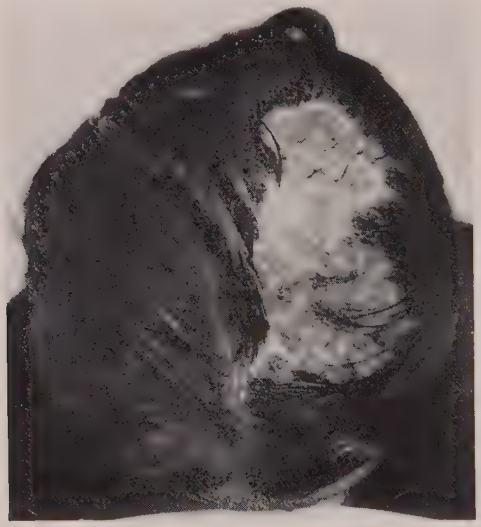


FIG. 123.—Lupus erythematosus, scalp. (Same patient as Fig. 121.)

mucous surface of the lower lip, where it gives rise to small, ill-defined, slightly scaly depressed patches, to shallow erosions and bluish-white depressed atrophic areas. On the inside of the cheeks and on the hard palate the recent patches are bright-red and somewhat infiltrated, while the older ones are bluish-white and depressed. On the tongue, where it is quite rare, it occurs as smooth red patches devoid of papillæ.

The course of the discoid variety is an exceedingly chronic one. After reaching an indeterminate size the patches often show but very little change for months, or after an indefinite duration they may slowly disappear completely or in part, leaving an area of smooth, whitish scar-tissue. Exceptionally, in cases with little infiltration, the disease may disappear spontaneously, leaving scarcely any trace, but the recovery is seldom permanent, recurrence being the rule.

As a rare complication epithelioma occurs in the scar, but this is much less frequent than in lupus vulgaris.

The disseminate variety, lupus erythematosus disseminatus, may follow the ordinary discoid form. Beginning upon the face, spreading thence gradually to the trunk and extremities, it may eventually involve large areas, and in exceptional cases may be almost universal. The eruption consists of numerous very slightly scaly, hyperæmic pin-head to large pea-sized spots and patches, some of which disappear spontaneously, but most of which persist for months, pursuing much the same course and undergoing the same evolution as the lesions of the discoid type.

It may begin acutely with elevation of temperature, often considerable, with headache, pain and swelling of the joints and glandular swellings, the eruption coming out rapidly and in successive crops. As an occasional serious complication Kaposi has described, under the name *erysipelas perstans faciei,* a persistent, erysipelas-like swelling of the face accompanied by high temperature, terminating in a large proportion of cases in coma and death. In rare instances vesicular and bullous eruptions, at times hemorrhagic, occur, as observed by Besnier, Kaposi, Hallopeau and others. Albuminuria, with or without uræmic symptoms, has been noted by Crocker, Sequiera, Danlos, and other observers. A large proportion of the acute cases terminate fatally, fifty per cent. of the deaths being due to pneumonia

Etiology.—According to the statistics compiled by the American Dermatological Association, it comprises considerably less than one-half of one per cent. of all diseases of the skin; and according to the same statistics is only a little more frequent than lupus vulgaris. In the author's experience, however, it is decidedly more common than the latter. It is unknown in infancy and quite infrequent in childhood and old age; it occurs most commonly between the ages of twenty and forty. Women are much more frequently affected than men, the proportion of cases in the former as compared with the latter being as two to one. In a considerable proportion of cases the peripheral circulation is sluggish, as evidenced by lividity of the hands, feet and ears, particularly noticeable in cold weather, the so-called chilblain circulation. It has been observed to follow other diseases of the skin usually of an inflammatory character, such as seborrhœic dermatitis, erysipelas and variola. In some instances prolonged exposure to the rays of the sun seems to have been the exciting cause; a very marked example of this has very recently been under the author's observation.

Since Besnier first called attention to the fact that in a large proportion of cases more or less decided evidences of tuberculosis are present, its etiological relationship to that malady has been, and still is, the subject of much discussion. That symptoms of tuberculosis are present in a very large proportion of the cases of lupus erythematosus is abundantly proved by the statistics of Boeck, Roth and others. Of 250 cases collected by Roth 185, or seventy-four per cent., exhibited tuberculous disease of glands, bones, the lungs or other

viscera. Its association with other cutaneous diseases commonly regarded as tuberculous, such as the papulonecrotic tuberculide, has been repeatedly observed. On the other hand, Jadassohn, Kern, and others have reported cases of erythematous lupus, dead from a variety of diseases in which the autopsy failed to disclose the slightest evidence of tuberculosis. The absence of the histological features usually present in tuberculous tissues; the failure to find the tubercle bacillus in the lesions; the almost invariably negative results of animal experimental inoculation lead those who believe it a tuberculous disease to adopt the view that it is not a bacillary affection, but one due to the toxins produced by tubercle bacilli in foci more or less remote from the eruption.

Very recently a number of investigators, among them Arndt, Hidaka and Friedlander, by employing antiformin and special stains, have succeeded in finding bacilli which morphologically and tinctorially resemble the bacillus tuberculosis; but neither Arndt nor Hidaka regards this finding as conclusive proof of the tuberculous character of the disease. In the past few years a number of successful experimental inoculations have been recorded; and quite recently Bloch and Fuchs have reported the production of tuberculosis in guinea-pigs by inoculation with pieces of tissue taken from four typical cases.

The suggestion of Galloway and MacLeod that it may be due to various toxins of unknown nature has as yet little of ascertained fact to support it.

Although the results of the most recent bacteriological studies lend much support to the view that it is a tuberculous disease, its etiology must still be regarded as *sub judice*.

Pathology.—The most generally accepted view concerning the pathology of lupus erythematosus is that it is a chronic inflammatory process produced by toxic substances of tuberculous origin. As the author has previously pointed out elsewhere, its occasional association with vasomotor phenomina characteristic of Raynaud's disease is very suggestive of the presence of a toxin which affects primarily the blood-vessels.

The histological picture varies considerably according to the stage of the disease, and this probably accounts in large part for the differences in the findings of those who have studied its histopathology. The primary and principal changes are situated in the papillary and subpapillary portions of the corium. The vessels and capillaries are markedly dilated, filled with blood and surrounded by dense, usually well-circumscribed, areas of round cells, chiefly lymphocytes, which in the acme of the disease may extend to the deepest part of the corium. The sebaceous and sweat-glands are often surrounded by a similar exudate, a feature, which along with the comedo-like plugs filling the mouths of the follicles, led the earlier observers to attribute a special share in the malady to the sebaceous glands. A few instances have

been reported in which giant-cells were noted, but this is altogether exceptional. Unna asserts that the cells which compose the exudate are, in the earliest stages of the lesions, plasma cells; he likewise describes as "central canalization," a system of irregular tubes winding through the cell areas to which he attributes special significance.

There is œdema of the corium, with swelling of the collagen fibres, and dilatation of the lymph-spaces.

Most authors speak of enlargement of the sebaceous glands with increased secretion, but others regard this as an error of observation, the glands of the nose and cheeks, the regions most frequently attacked, being normally very large and active.

In the atrophic stages various degenerative processes appear. The cells of the exudate undergo a degeneration which has been variously interpreted as fatty, colloid, hyaline, etc. According to Holder this degeneration is peculiar in that it does not affect the cells *en masse,* but individual cells scattered here and there.

Among the most characteristic changes are those which affect the elastic tissue. In the papillary and subpapillary portions of the corium the elastin fibres become somewhat swollen, less sharply defined than normal, and later are transformed into acidophile granular masses (collastin), or basophile fibres (elacin), the former sometimes almost completely replacing the collagen fibres of the papillæ. In the areas occupied by the cell infiltrate the elastic tissue has completely disappeared. Both the sebaceous and sweat-glands undergo atrophy, with diminished or entirely suppressed excretion (Fig. 124).

The changes in the epidermis are secondary to those in the corium, and vary somewhat according to the age of the lesion. There is a more or less marked hyperkeratosis, and numerous horny plugs fill the dilated mouths of many of the follicles and depressions in the rete, unconnected with the follicular openings. At the acme of the malady there is usually a moderate acanthosis, but later the rete is thinned and the cells of the lowest layers show more or less degeneration.

Diagnosis.—The appearance of a well-developed patch of lupus erythematosus of the ordinary discoid type is so characteristic that it is not readily mistaken for any other affection. It may at times be confounded with seborrhœic dermatitis, but it differs from that disease by its bluish-red or dusky-red color, by the dry adherent scales which cover its surface, unlike the loose fatty scales characteristic of the seborrhœic affection, and above all by the peculiar cicatricial atrophy of the central portion of the patches. It may resemble lupus vulgaris of the type described by Leloir as lupus vulgaris erythematodes; but there are no milium-like yellowish puncta in the border of the patches such as are to be found in that disease.

Occasionally there may be considerable resemblance between a patch of erythematous lupus of the infiltrating type and a patch of the superficial, non-ulcerating nodular syphiloderm; but the latter is more distinctly nodular, is often crescentic in shape, spreads more rapidly, and

never presents the parchment-like atrophy characteristic of the former.

Quite exceptionally there may be an unusual amount of scaling, so much so that it may bear a superficial resemblance to psoriasis, but the latter disease is never followed by scarring, almost invariably a sequel of erythematous lupus. The telangiectic form described by Crocker may be mistaken for rosacea, but there are no papules and pustules such as accompany that affection. Lupus erythematosus affecting the scalp is to be distinguished from alopecia areata by the

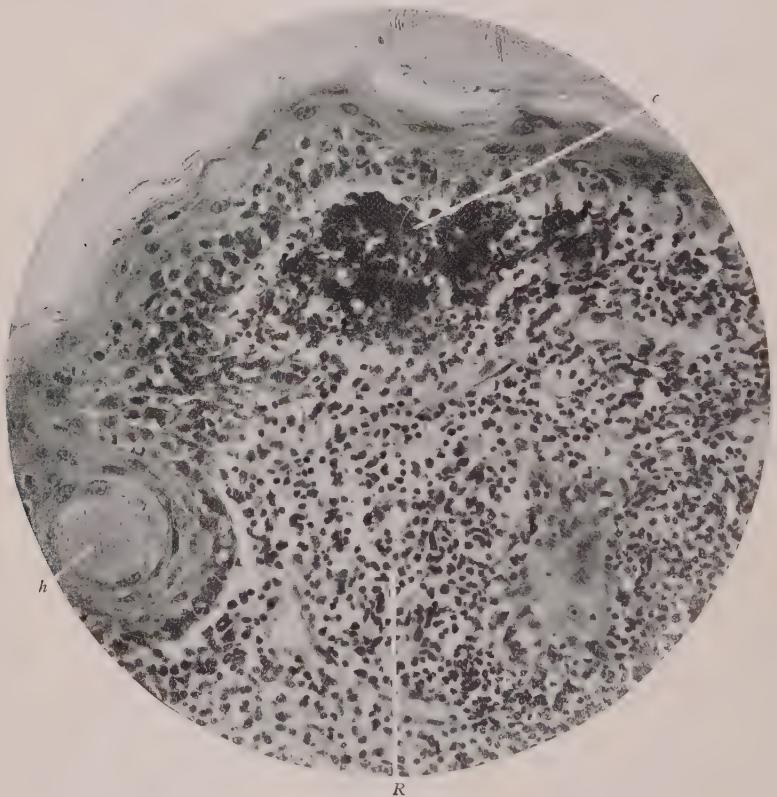


FIG. 124.—Lupus erythematosus. *R*, round-cell exudate; *c*, collastin (degenerated elastin); *h*, horny plug in mouth of follicle.

presence of the red and infiltrated border which surrounds the bald patches, and by the scarring which always follows it.

Prognosis.—Lupus erythematosus is usually a very chronic affection and extremely rebellious to treatment. In superficial cases of recent origin much may be accomplished by judicious persevering treatment. In rare cases it may disappear spontaneously, leaving very little trace of its existence, but as already mentioned relapses in such cases are common. When the patches are at all infiltrated a cure is always a matter of prolonged treatment, and even under the most favorable conditions a certain amount of scarring is certain to

follow. Even with the cure of existing patches there is no certainty that new ones will not appear either in the immediate neighborhood of the old ones or in new regions. In the acute disseminated form, fortunately rare, the prognosis is always serious, since a fatal termination is a frequent occurrence.

Treatment.—The patient's general health should, on general principles, be carefully looked after, endeavoring to correct whatever is found amiss. Tea, coffee, alcoholic beverages of every kind, condiments, hot soups, or other articles of food which tend to increase facial hyperæmia should be forbidden or greatly restricted. Exposure to the direct rays of the sun should be carefully avoided. The author is quite convinced that this is decidedly injurious.

As is always the case in intractable diseases, a host of remedies, both internal and external, have been advised in this affection; and it must be admitted that most of them are of more than doubtful efficacy. Among the internal remedies, arsenic, iodide of starch, iodide of potassium and phosphorus have been employed with asserted curative effect, but ample experience has proved their uselessness to control the malady in any appreciable degree. There are a few drugs, however, which seem to exert a favorable influence in certain types of the disease and these are quinine, salicin and the salicylates. Quinine should be given in considerable doses, not less than twenty to twenty-five grains (1.30 to 1.60) per diem; the salicylates and salicin in quantities of not less than one drachm (4.0) a day.

In the author's experience these remedies are useful chiefly in the superficial or recent cases, and in these they often produce a decided diminution of the hyperæmia. Crocker thought he obtained a similar result from the internal administration of ichthyol, in five-grain (0.32) doses, three times a day. In the acute form trial should be made of quinine in large doses. The choice of the local remedies to be employed must depend a good deal upon the type of the disease. In superficial patches with decided hyperæmia and little infiltration, mild lotions, such as the calamine lotion, or the lotion of sulphate of zinc and sulphuret of potash, five to fifteen grains (1.0 to 0.32) of each to the ounce (32.0) of water, as advised by Duhring, will often be found more effective than stronger applications. Ninety-five per cent. alcohol, freely and frequently mopped on, as recommended by the younger Hebra, is likewise a useful lotion, lessening the hyperæmia decidedly. When the patches are irritable, as happens occasionally, a saturated solution of boric acid in water may be used with good effect for a time. In the author's hands no application has proved quite so effective in superficial and recent cases as a solution of ichthyol in water, thirty per cent. to fifty per cent., painted on with a camel's-hair brush twice a day. This solution dries into a smooth brown varnish which is readily removed with warm water. If its color makes it impracticable to have it on during the daytime, it may be applied at bedtime and removed in the morning with a sponge and hot water. Unna recom-

mends a ten-per-cent. mixture of ichthyol in collodion, but this is no more effective than the aqueous solution and is decidedly less agreeable to use.

In the more sluggish cases, with some infiltration, more stimulating applications may be used. Daily frictions with green soap or the tincture of green soap are useful; if these produce any considerable inflammatory reaction they should be suspended for a few days and the calamine lotion or a lotion of boric acid applied. Salicylic acid in collodion, two per cent. to three per cent., or resorcin in the same proportions, may be painted on the patches every day or every second day. The resorcin collodion should be used with some care, since it occasionally produces an unexpected amount of inflammation. The author has recently employed with much benefit in cases with considerable infiltration a three per cent. solution of salicylic acid in seventy per cent. alcohol, mopping it on freely twice a day until decided desquamation is produced; it should then be intermitted for a few days and resumed later. Hollaender recommends the daily painting of the patches with tincture of iodine in conjunction with the internal administration of quinine, 7½ grains (0.5) three times a day. The iodine is continued for five or six days, when it is suspended until the crust which it has produced peels off; the application is then resumed. Hollaender claims a specific effect for this treatment; it sometimes answers very well, but it also frequently fails. When the disease is stationary, showing little tendency to extend, and when it has failed to respond to milder methods of treatment, the superficially acting caustics may be cautiously used. One of the best of these in the author's experience is trichloracetic acid, which should be lightly brushed over the surface of the patches once a week or every ten days, the frequency of the application depending upon the effect produced. Pure carbolic acid may be applied every ten days, as suggested by George Henry Fox, or a mixture of equal parts of carbolic acid and camphor, as recommended by Crocker.

Freezing with carbon dioxide "snow" (solid carbon dioxide) is a very satisfactory method of treating "fixed" patches of moderate size. The duration of the application of the snow varies from twenty to forty seconds, being governed by the amount of infiltration present. The cosmetic results of such treatment are usually much superior to those obtained by other caustic applications. Destructive caustics, such as arsenic paste and pyrogallol, are advised at times, but these, in the author's opinion, should rarely if ever be used, since they are likely to produce as much disfigurement as the disease itself, if not more.

The X-ray, the Finsen light and radium have been employed with beneficial results, but their effect is somewhat uncertain; at times they not only fail to produce improvement, but actually aggravate the disease. In employing these agents it is always well, in view of the uncertainty of the results, to expose a small area at first, until some definite idea of their effect is obtained, before applying them to the whole patch.

Quite recently the high-frequency current has been used with asserted excellent effect in a considerable number of cases.

PELLAGRA

Synonyms.—Mal de la rosa; Mal del sole; Lombardy leprosy; Fr., Pellagre; Erythème endémique.

Definition.—A chronic endemic disease characterized by an erythema chiefly of exposed parts with gastro-intestinal and nervous symptoms.

First observed and described in Spain by Casal in the early part of the eighteenth century, it spread to Italy, where it assumed enormous proportions in the course of years; to the south of France; to Roumania, where it became very prevalent; and to other countries of southeastern Europe. In recent years it has acquired a special interest for the medical profession and health authorities of the United States, where it has been found to be widely distributed, being especially prevalent in the Southern States.

FIG. 125.—Pellagra.

Symptoms.—The early stage is usually marked by languor, headache, vertigo, loss of appetite with gastro-intestinal symptoms, such as pain or uneasiness in the epigastrium and abdomen and diarrhœa, or diarrhœa alternating with constipation. Following these symptoms or coincidently with them an erythema resembling sunburn rather suddenly appears upon exposed parts, such as the back of the hands (Figs. 125 and 126), stopping abruptly at the wrist, upon the tops of the feet, and upon the legs in those who go barefoot, and less frequently about the neck, where it may occur as a band two or three inches wide, the so-called pellagrous collar. The backs of the hands are dusky-red, more or less swollen, and in the severe cases covered with vesicles and blebs; in the latter case there is often quite severe burning pain. This dermatitis is usually made much worse by exposure to the sun. These symptoms usually appear in the early spring, and after lasting for a period varying from two or three weeks to

as many months gradually disappear; the erythema fades, the skin desquamates and after a time regains its normal appearance except for a slight pigmentation, and the patient is apparently quite well.

The following spring these symptoms recur and are usually more pronounced than in the first attack, and recovery is slower and less complete. After two or three such seasonal recurrences the symptoms become continuous and more pronounced; the skin on the back of the hands is a reddish brown, thick, dry, rough, and scaly, and the entire cutaneous surface is more or less discolored, harsh, dry, and finely desquamating; diarrhœa becomes more profuse and less controllable; there is a marked burning of the mouth and tongue,

FIG. 126.—Pellagra. Same patient as Fig. 125.

the latter dry and smooth and sometimes superficially ulcerated. The nervous symptoms likewise become more pronounced: exaggerated tendon reflexes, muscular tremors, convulsive movements of the extremities, occasionally epileptiform convulsions, paralyses, and ocular symptoms such as ptosis, amblyopia, diplopia are some of the symptoms referable to the nervous system. Usually the patient is more or less melancholic and frequently exhibits a decided tendency to suicide, especially by drowning; at other times he becomes maniacal.

With the progress of the malady the skin on the back of the hands, instead of being thickened, becomes atrophied—it is thin and shrivelled; there is profuse diarrhœa, and the patient is no longer able to control the bladder and bowels; he becomes greatly emaciated and stuporous and finally dies after a period varying from two to ten or more years.

Exceptionally the disease runs an acute course with high temperature, extreme prostration, delirium, with stiffness of the muscles of the neck and occasionally opisthotonos. Such cases are observed much more frequently in regions in which the malady has been recently introduced than in those in which it has prevailed for some time. Acute cases of this type have been observed with especial frequency in the southern United States.

Etiology.—It is considerably more frequent in women than in men, and occurs at all ages, although it is most common in adults between the ages of twenty and fifty. It is far more frequent among the inhabitants of the rural districts than among the dwellers in towns, among the very poor and ill-nourished than among the well-to-do, although, as observed in the United States, it also occurs among the latter to a limited extent. Alcoholism and exposure to the sun are predisposing causes.

The direct cause is as yet undetermined. For many years the maize theory—the theory that it was in some way due to the use of a diet the chief article of which was corn—numbered many supporters. Corn was supposed to be deficient in some substance necessary to proper nutrition, or to contain some toxic substance, either normally or as the result of decomposition, which acted injuriously upon the human economy (Lombroso). None of these suppositions, however, has been satisfactorily proved, and it has been definitely shown that the malady may occur in those who have not used a corn diet. Recently the theory that it is an infection probably conveyed by some insect has had supporters, and Sambon incriminates the sand-fly or buffalo gnat, a species of *simulium,* as the carrier of the infecting agent, but the correctness of this theory has not yet been demonstrated. Quite recently Alessandrini and Scala have expressed the opinion that silica in colloidal solution in drinking water may be instrumental in its production. Experiments recently conducted by Goldberger and others of the United States Public Health Service would seem to have demonstrated the dietary origin of the affection. Goldberger and his associates believe it to be the result of the use of an unbalanced diet, one largely composed of carbohydrates, and have apparently proved the correctness of this view by producing symptoms resembling those of pellagra by the experimental employment of such a diet in a number of individuals.

Pathology.—The pathological changes in the skin present nothing characteristic and are chiefly indicative of inflammation. The epidermis is at times thinner than normal, at others thickened with considerable hyperkeratosis, and there is a pronounced increase in the

pigment in the lower cells of the rete. In the corium there are perivascular collections of round cells with some œdema of the collagen fibres. Raymond, who specially looked for alterations of the nerves in the skin, was unable to find any trace of such change, but recently Corlett and Schultz have described inflammatory and degenerative changes in the nerves of the corium which they believed to be primary.

In sections from a case of chronic pellagrous dermatitis, which the author had the opportunity to study through the courtesy of Professor Allen J. Smith, there was moderate hyperkeratosis with

Fig. 127.—Pellagrous dermatitis. Extremely marked acanthosis; inflammatory exudate in corium.

parakeratosis and an enormous acanthosis, the rete extending in long, branched and anastomosing processes some distance down into the corium. The papillary body and the subpapillary portion of the corium were occupied by an abundant exudation of lymphoid cells with a limited number of plasma cells (Fig. 127).

The intestinal mucosa is hyperæmic, and ulceration is not uncommon. Chronic degenerative changes, particularly fatty degeneration, with marked pigmentation, are present in the viscera. Inflammatory and degenerative changes are likewise present in varying degree in

the central and peripheral nervous systems of such a character as to suggest their toxic origin.

Diagnosis.—The cardinal symptoms of pellagra are: first, a dermatitis situated on the exposed parts of the skin; second, gastro-intestinal symptoms, usually with diarrhœa; and, third, mental symptoms, more especially melancholia. These, together with their markedly seasonal recurrence, usually make the disease readily recognizable, particularly in regions where it is known to be endemic. Not all these symptoms are invariably present, however, and when mild or ill-defined, the real character of the affection may be easily overlooked. When the mental symptoms are pronounced and the cutaneous and gastro-intestinal symptoms inconspicuous, it may readily be mistaken for ordinary insanity.

Prognosis.—In mild cases under favorable circumstances recovery frequently takes place; in severe and advanced cases death is the rule, the average duration of the malady being about five years, although it may last much longer. In acute cases with extreme prostration and high temperature, death almost invariably takes place within a short time.

Treatment.—The only treatment found thus far to be of service is dietetic and hygienic. The patient should be given an abundance of nutritious, easily digested food of a varied character; he should take fresh meat, milk, eggs, and fresh vegetables, particularly fresh (or dried) peas and beans, which Goldberger in the studies already referred to found especially useful. It is very doubtful whether any drug exerts any appreciable effect upon the course of the disease, although arsenic is regarded by a number of authorities as having some value.

For the dermatitis, which when acute may be accompanied by considerable pain of a burning character, soothing washes and ointments, such as are useful in other forms of dermatitis, may be employed. Exposure to the rays of the sun should be avoided in the acute attacks, since the injurious effects of these upon the skin have been abundantly demonstrated.

ACRODYNIA

Synonyms.—Mal des pieds et des mains; Erythème épidémique.

Definition.—An acute epidemic disease characterized by erythema of the extremities accompanied by gastro-intestinal and nervous symptoms.

This affection, which bears a considerable resemblance to pellagra, was first observed in Paris in 1828, where it occurred as a widespread epidemic which extended to other parts of France. Epidemics and sporadic cases have likewise occurred in Belgium, the Crimea, Constantinople, and Mexico, principally in garrisons, hospitals, and prisons.

Symptoms.—It usually begins with nausea and vomiting, fre-

quently accompanied by diarrhœa, the last often continuing to the end of the attack. After five to ten days, pricking and burning of the hands and feet, particularly of the palms and soles, appear, followed by an erythema with some œdema, or, less frequently, vesicles and blebs, which extends to other parts of the extremities and exceptionally to portions of the trunk; there is likewise a conjunctivitis with transient swelling of the face. Hyperæsthesia and burning appear upon various parts of the skin, which may at times be so severe as to be almost insupportable; later anæsthesia may replace the hyperæsthesia, and in severe cases there may be painful muscular contractions and paralysis. The skin becomes thick and scaly and brown or blackish, especially in those regions, such as the folds of the axillæ, the nipples, and the groins, where pigment is normally present. The duration of the affection is usually from three to four weeks, but relapses, which are not infrequent, may prolong it to two or three months. Recovery, although slow, is the rule, except in the old and feeble, in whom it may terminate fatally.

Etiology.—Owing to the resemblance of its symptoms to those of pellagra, it is commonly believed to be due to some toxic substance of unknown character in some article of food, but this is yet nothing more than conjecture.

Treatment.—The treatment is altogether symptomatic and is to be conducted on general principles.

TRYPANOSOMIASIS CUTIS

Synonym.—Sleeping sickness.

Definition.—A chronic systemic disease of Central and Southern Africa, due to infection by the Trypanosoma gambiense and other varieties of trypanosoma, characterized by irregular fever, cutaneous eruptions, extreme prostration, and stupor, ending in death.

Symptoms.—Infection takes place through the bite of the tsetse fly, of which two varieties, Glossina palpalis and Glossina morsitans, are known to serve as intermediate host for the trypanosome. In a certain proportion of cases a more or less marked local reaction follows in a few hours after the bite of the fly; redness and swelling, accompanied by itching, burning, and a feeling of tension, appear at the site of the bite, and after twenty-four hours an elevation about the size of a dime, resembling to some extent a furuncle, forms, accompanied by swelling of the neighboring lymphatic glands. These lesions, which are found usually upon the legs, neck, in the axillæ, and on the flanks, disappear after a few days, leaving a transient pigmentation. Exceptionally the inflammation is very severe, and is accompanied by lymphangitis and high temperature. In the earlier stages of the infection pustular and papular eruptions are common, the latter itching intensely, especially in the negro. Transient erythematous patches resembling erythema multiforme occur upon the trunk and face; these frequently assume a circinate arrangement,

PLATE XXII

Courtesy of Pfaundler and Schlossman

Variola

Varicella

the rings often being several inches in diameter. According to Manson, erythema nodosum likewise occurs. Local œdemas, most noticeable in the face and in the erythematous patches, are also of frequent occurrence. These eruptions are of considerable diagnostic importance.

Treatment.—Apart from local applications, such as lotions of phenol, menthol, etc., for the relief of the pruritus, which is frequently severe, the treatment is that of the general infection. Arsenic, particularly atoxyl, and antimony are the most effective remedies.

EXANTHEMATA

Under the term exanthemata, or eruptive fevers, is included a small but highly important group of diseases, all of which are distinguished by a well-marked and characteristic cutaneous eruption; all are infectious, extremely contagious, and some of them rank among the most dangerous disorders which attack mankind. All have the remarkable property of conferring partial or complete immunity upon the individual attacked, so that second attacks are infrequent or even rare. In this group are included smallpox, chickenpox, scarlet fever, measles, and rubella, or rötheln.

SMALLPOX

Synonyms.—Variola; Fr., Petite verole, Variole; Ger., Blattern, Pocken; Ital., Vaiuolo; Span., Viruela.

Definition.—An acute, infectious, and highly contagious febrile disease characterized by an eruption which is successively papular, vesicular, and pustular (Plate XXII).

Symptoms.—A period of about twelve days elapses between infection and the appearance of definite symptoms, but this period of incubation may be considerably shorter or longer in exceptional cases. During this time the patient is apparently in his usual health, but in the final days there may be malaise, headache, and loss of appetite.

The stage of invasion, or initial stage, usually begins suddenly and often violently, with a severe rigor or chilliness, violent headache, nausea, and vomiting, epigastric pain, and in about one-half the cases severe lumbar and sacral pain; the temperature rises rapidly to 103° or 104°, and may go to 105° or 106° in the following twenty-four hours, when delirium, occasionally of a violent type, frequently appears. In children drowsiness, stupor, or coma and convulsions are not infrequent during this period. In the invasive stage eruptions, prodromal rashes, frequently appear, usually about the second day, which may be erythematous or petechial in type. The most frequent is an erythematous eruption bearing considerable resemblance to measles, from which it differs, however, in being less elevated, more strictly macular; it may be more or less general in its distribution or may be limited to certain regions, and is more frequently observed in mild than in severe cases; occasionally instead of resembling measles it

may be decidedly scarlatinoid. Less frequently a petechial eruption appears during the initial stage, which is of much more serious import; while it may appear in cases which pursue a mild course, it much more frequently occurs in the severe forms of the malady and may be the precursor of a hemorrhagic eruption. It exhibits a special predilection for the axillæ, sides of the thorax and pectoral regions, for the lower part of the abdomen, the groins, and inner surface of the thighs, the axillary and crural triangles of Simon. The duration of these prodromal eruptions, especially of the erythematous variety, is usually quite short, and the frequency with which they appear varies much; in certain epidemics they are quite common, while in others they are altogether exceptional.

The initial or invasive stage lasts three days, but it may be as short as two days or as long as four. On the third day the variolous

Courtesy, George Henry Fox

FIG. 128.—Smallpox.

eruption appears, first upon the face, especially upon the forehead at the border of the hairy scalp, around the mouth, and upon the wrists, whence it spreads in the course of from thirty-six to forty-eight hours to the trunk and lower extremities. The earliest stage of the eruption is a small red spot which increases in size and elevation until at the end of twenty-four hours it has become a hard "shotty" papule. New lesions continue to make their appearance for one or two days, or exceptionally for three. With the appearance of the eruption the temperature begins to decline, and in mild cases may go to the normal or slightly below, and there is a decided amelioration of all the symptoms. According to Welch, this fall in the temperature, with improvement in the general condition, does not take place in unmodified smallpox until the second, third, or fourth day of the eruption. About the third day of the eruption, the sixth day of the disease, small acuminate vesicles (Fig. 128) with clear contents appear upon the summit of

the papules, which continue to enlarge for two or three days, until they reach the size of a pea. When fully developed these present a well-marked central depression, umbilication, which is characteristic of the variolous eruption. Unlike the vesicle of an ordinary dermatitis, the vesicle of smallpox is multilocular, so that a single puncture does not evacuate the entire lesion. About the sixth day of the eruption, the ninth or tenth of the disease, the contents of the vesicles become turbid and shortly purulent; the pustules are surrounded by an inflammatory halo and the skin is more or less swollen. When the eruption is abundant the face may be so swollen that the patient is no longer recognizable. With the appearance of suppuration the umbilication which characterized the vesicles disappears. Owing to the somewhat later appearance of the eruption upon the trunk and lower extremities, these changes in the lesions are correspondingly delayed in these regions, so that the pustular stage may be fully established upon the face while the trunk, thighs, and legs are still covered with vesicles. Upon the palms and soles the eruption presents a special aspect; owing to the thickness of the horny layer of the epidermis, the lesions are flat and deeply imbedded in the skin, are usually very abundant, often confluent, and accompanied by severe pain. They do not rupture, but dry into flat, dark-brown, adherent crusts, which may remain imbedded in the horny layer for weeks unless forcibly removed.

Coincidentally with the cutaneous eruption an eruption appears upon the mucous membranes of the mouth, pharynx, nasopharynx, and nose, larynx, and trachea, with difficulty in swallowing and hoarseness or aphonia. The tongue may be covered with pustules and greatly swollen (glossitis variolosa); the nose may be blocked with crusts so that the patient can no longer breathe through it, and œdema of the glottis may occur, threatening death from suffocation. Much less frequently the eruption appears upon the vaginal and rectal mucous membranes. Owing to the moisture of the parts, the eruption upon the mucous membranes is whitish or grayish, and the vesicles through maceration soon become superficial ulcers.

With the appearance of the pustular stage the fever rises again, the rise sometimes preceded by a chill and headache, restlessness, and delirium, often of a violent type, following.

With pustulation the eruption reaches its final stage, and about three days later, the eleventh or twelfth day of the eruption, the period of desiccation appears; the pustules begin to dry up into yellowish or brownish crusts, the inflammation and swelling of the skin rapidly subside, the fever begins to decline, the restlessness and delirium disappear, and the patient becomes more and more comfortable. After the fall of the crusts, depressed red scars are left, which become quite livid on exposure of the skin to cold; later pigmentation appears in many of them, which may persist for months. During the period of desiccation the hair of the scalp, beard, and brows may be lost

wholly or in part, but this alopecia is in most cases a transient one except in those regions in which the pustules have been so deep-seated as to destroy the hair follicles. The nails may likewise be lost, but this is rare.

Numerous departures from the usual type as just described are observed. The number of eruptive lesions may be very small, or the eruption in rare cases may be absent altogether (variola sine exanthemata). On the other hand, they may be so numerous as to form a continuous sheet covering the face and extremities (variola confluens).

In the confluent type the symptoms of the initial stage are commonly of a severe character; the temperature quickly reaches a height of 104°, 105°, or 106°, there is violent headache with nausea and vomiting and severe lumbar and sacral pain. According to most authors, the eruption appears earlier than in the ordinary type, eighteen to twenty-four hours earlier (Curschmann), but Welch finds it develops less rapidly. Instead of consuming two or three days to extend over the body, it reaches its full development in twenty-four to thirty-six hours, and is especially abundant upon the face and hands, where it is accompanied by great swelling, and numerous lesions coalesce to form large blebs filled with seropurulent fluid. Although confluent upon the face, hands, and feet, the eruption usually remains discrete upon the trunk even in the severest cases.

The eruption is likewise unusually severe upon the mucous membranes; the mouth, tongue, and pharynx are covered with a grayish mass which extends upwards into the nasopharynx and nose and downwards to the larynx and trachea; there is parenchymatous inflammation of the tongue, with extreme swelling; necrosis of the cartilages of the larynx and œdema glottidis frequently occur. Inflammation of the parotid gland is common, and marked salivation may be a prominent and annoying symptom. Conjunctivitis and corneal ulcer are also among the complications which may be present, especially in the pustular stage.

While the usual fall in the temperature occurs upon the appearance of the eruption, it is much less marked than in the cases of the ordinary type, it falls very slowly and begins to rise with the appearance of pustulation. Coma or violent delirium is common, and uncontrollable vomiting and diarrhœa may persist throughout the attack.

The usual termination of the confluent form is death, or if recovery takes place convalescence is slow and often interrupted by numerous sequelæ, such as multiple abscesses, erysipelas, and occasionally gangrene. Extreme scarring usually results, and permanent alopecia may follow, owing to the depth of the pustules on the scalp.

Hemorrhagic smallpox occurs under two forms, viz., purpura variolosa and variola pustulosa hemorrhagica.

In purpura variolosa, in the latter part of the initial stage, which

does not differ in any essential particular from the initial stage of the ordinary form, a scarlatiniform eruption appears upon the trunk and extremities, leaving the face free, and upon this eruption petechiæ and ecchymoses presently appear, which rapidly increase in numbers and extent. The face becomes red and swollen, the lids discolored by hemorrhage, the conjunctivæ filled with effused blood, at times sufficient to produce a marked chemosis. Severe retching and vomiting occur, frequently with the voiding of bloody material; cough with serous and bloody expectoration is also common. The temperature seldom reaches the height observed in the non-hemorrhagic forms and the patient usually, but not always, preserves his consciousness and intelligence until the end. This form is usually rapidly fatal, death occurring in from three to five days, commonly before the appearance of the variolous eruption.

In the second form, variola pustulosa hemorrhagica, the hemorrhage takes place into the variolous lesions, appearing most frequently during the vesicular stage, although it may occur at any stage of the eruption. The hemorrhagic lesions usually appear first upon the lower extremities, the vesicles being filled with a bloody fluid instead of the usual clear serum; in addition to the hemorrhagic vesicles and pustules there may also be petechiæ and ecchymoses between them. In this, as in the preceding form, purpura variolosa, bleeding may take place from the mouth, nose, bowels, and bladder. While it usually runs a somewhat longer course than the purpuric form, it is no less fatal, and in the rare cases in which the patient survives, a protracted convalescence follows.

VARIOLOID

As the consequence of a partial immunity, either natural or acquired through a previous attack or vaccination, smallpox at times presents great variations from the usual type; to this modified form the term varioloid is applied, although it is limited by some authorities to the modified form occurring in vaccinated subjects.

The initial stage, or stage of invasion, may be decidedly longer or shorter in varioloid than in the unmodified form; it may last but two days, or even exceptionally but one (Curschmann), or it may be protracted to four or five. The symptoms of this stage, while usually milder than in the ordinary form, may be quite as severe, but with the appearance of the eruption the temperature undergoes a decided and sudden fall to the normal, or even slightly below, and seldom goes above this point again in mild cases, although there may be a slight rise when the eruption becomes pustular if it is abundant. Erythematous eruptions, such as have already been described, are much more frequent in the initial stage of varioloid than in that of variola; and Curschmann was of the opinion that the more extensive such eruptions are, the less the development of the pocks which follow them. In varioloid the eruption, contrary to what occurs in variola, does not always begin upon the face, but may appear first upon the trunk; it

is often scanty, but may be quite abundant, even semiconfluent at times. It may appear as a single crop, and usually reaches its full development in a shorter time than the unmodified form; it frequently aborts in the vesicular stage, drying up before suppuration appears, although up to this point it has undergone the usual development. Occasionally after reaching the papulo-vesicular stage the vesicle dries up and the papule remains as a small wart-like elevation (variolois verrucosa) which may remain for a considerable time; this form of lesion is seen most frequently in the face. The period of desiccation is usually short, and scarring is either altogether absent, the usual rule, or very slight, although exceptions are observed.

Numerous complications and sequelæ are observed in all forms of smallpox except in the modified form, varioloid. Furunculosis, crops of abscesses, phlegmonous dermatitis, erysipelas, and, in rare instances, gangrene, are among those which may appear in the skin, the first two being very common. An impetiginous eruption characterized by scanty blebs filled with a dirty yellow fluid is common during the stage of desiccation (Welch and Schamberg). Gangrene, when it occurs, usually attacks the scrotum, and is a very grave complication, terminating fatally as a rule. Ulceration of the cornea with subsequent blindness, chronic suppurative otitis media, with more or less impairment of hearing, are likewise occasional sequelæ. Pregnant women almost invariably abort.

Etiology and Pathology.—Neither age nor sex exerts any appreciable influence upon the incidence of smallpox. It is decidedly more frequent in the winter season than in the warm months. It is highly contagious, and is acquired in the great majority of cases by direct contact with a diseased individual or indirectly through contact with infected clothing or other articles used by him. While direct or indirect contact is the most frequent manner of its transmission, there is apparently but little doubt that it may also be transmitted for some distance through the air. It is most contagious during the period of suppuration and desiccation, but is probably contagious at all periods except the stage of invasion.

Numerous bacteria of various kinds are present in the pustules, and in severe cases may also be found in the blood, but none of these are to be regarded as other than secondary infections, having no etiological significance. In 1892 Guarnieri described a protozoön found in the lesions of vaccinia and smallpox, which he regarded as the direct cause of the malady, and to which he gave the name *cytoryctes vaccinæ*; these findings were subsequently confirmed by Wasielewski, and more recently, in large part, by Councilman, Magrath, Brinckerhoff, and Tyzzer. Although it seems probable that this organism is the primary cause of the disease, further study and observation are still necessary to definitely determine its significance.

The vesicle of smallpox is situated in the epidermis, beginning in the upper layers of the rete. The epithelial cells become œdematous,

their protoplasm is transformed into a large-meshed reticulum (the reticulating colliquation of Unna, the *alteration cavitaire* of Leloir), and several such cells unite to form a multilocular vesicle filled with a fluid which at first is clear, but later becomes purulent. Many of the epithelial cells in the lower layers of the rete, which form the bottom of the vesicle, are transformed into large round, oval, or pyriform bodies, two or three times the size of normal epithelial cells, containing a large cavity in which are from two to a dozen or twenty large round nuclei, the "ballooned" epithelium of Unna; these changes are followed by fibrinoid metamorphosis. The umbilication, which is a characteristic feature of the smallpox vesicle, was formerly believed to be due to its situation about a hair follicle or the mouth of a sweat-duct which held down the centre, but the vesicles are not confined to these localities. Auspitz and Basch thought the periphery swelled more rapidly than the centre of the vesicle, so that the latter remained below the level of the former; Unna's explanation of the umbilication is in effect the same.

Marked dilatation of the vessels of the corium occurs and numerous plasma-cells are present in the adventitia. After the fifth day all the vessels of the cutis are dilated and there is an abundant exudation of leucocytes, especially dense in the papillæ, and extending upwards between the œdematous and ballooned epithelial cells of the epidermis. Important changes are found in all the viscera.

Diagnosis.—The disease with which smallpox is most frequently and most readily confounded is chickenpox, and the differential diagnosis is not always easy, especially when it concerns the mild forms of the former. In smallpox the eruption is preceded by high temperature, headache, backache, nausea, and vomiting lasting for three days; in chickenpox the eruption is frequently the first symptom of illness, and the constitutional symptoms are as a rule mild, and may be so slight as to escape notice altogether. In the former the eruption begins as hard papules, which in the course of two or three days become vesicles and later pustules; in the latter the eruption is vesicular from the beginning and the vesicles are comparatively thin-walled and readily ruptured. The eruption of smallpox comes out in the course of thirty-six to forty-eight hours, in one crop, while the eruption of chickenpox comes out in successive crops for some days, so that successive stages of the lesions may be present at the same time. The lesions of smallpox require ten to twelve days for their complete evolution, while those of chickenpox run a comparatively rapid course, drying up in the course of three or four days. Umbilication of the lesions is the rule in smallpox, the exception in chickenpox, and when it does occur in the latter it is usually ill-defined.

The lesions of the pustular syphiloderm are at times mistaken for the pustules of smallpox, and vice versa, but the syphilitic eruption is not preceded by a short and definite stage of invasion, practically never exhibits a vesicular stage, and as a rule is not accompanied by

marked elevation of temperature, although it must not be forgotten that there are exceptions to this last; other characteristic symptoms usually coexist with the eruption, such as mucous patches, condylomata, and general adenopathy. The Wassermann reaction is also a valuable aid in the differential diagnosis, but it should be remembered that smallpox is just as likely to occur in a syphilitic as in a non-syphilitic subject.

Smallpox may be at times mistaken for measles, either in the period of invasion, when a moribilliform rash is sometimes present, or in the early eruptive stage, when the papules are very numerous and still small; but the absence of coryza, conjunctivitis, and bronchitis, and the more or less decided fall in temperature which occurs with or shortly after the appearance of the eruption will serve to distinguish it from the latter affection.

Impetigo contagiosa is occasionally mistaken for smallpox when the latter is epidemic, but the absence of constitutional symptoms, the usual limitation of the eruption to the uncovered parts of the skin, in most instances the face, the very superficial character of the lesions, which show a decided tendency to extend peripherally, are characteristics which make the differential diagnosis easy.

Prognosis.—The prognosis is unfavorable at both extremes of life. In infancy and childhood the mortality is very high; in the epidemics observed by Curschmann the mortality in children under ten years of age was as high as fifty-eight per cent. Alcoholic subjects bear the disease badly, and delirium tremens, a not uncommon complication in such, is usually fatal. Confluent smallpox is very dangerous, and all the hemorrhagic forms are almost invariably fatal. In varioloid the prognosis is very favorable; death is infrequent.

Treatment.—There is no specific for smallpox, and the treatment must be conducted on general principles. The patient should occupy a large, thoroughly ventilated room, and will usually be more comfortable if it is somewhat darkened. He should have an abundance of easily digested and assimilable nourishment, and should be sponged or bathed at intervals, especially when the temperature is high. In confluent cases, especially during the stages of suppuration and desiccation, the continuous warm bath has been found of use, adding much to the patient's comfort. A great many local remedies have been recommended at various times for the prevention of scarring, but few or none of these have any demonstrable effect. Moore recommended the application to the face of a mask of lint soaked in iced water and glycerin, an application which Schamberg finds greatly relieves the itching and burning. Painting the face with tincture of iodine has been advised; this measure seems to be of service occasionally and should therefore be tried. The red-light treatment, which has for its aim to completely exclude the actinic rays of light from the room occupied by the patient, has been recently revived by Finsen, who stated that suppuration was prevented when treatment was begun

before the fourth or fifth day; other observers, however, have found it without influence.

VACCINAL ERUPTIONS

Generalized Vaccinia, Vaccinia Generalisata.—Occasionally it happens that some days after vaccination, most frequently some time between the fifth and tenth day, an eruption appears, most commonly in successive crops, composed of lesions resembling the vaccine lesion, and which pass through the same evolution—they are successively papules, vesicles, and pustules. The number and distribution of the lesions vary greatly; there may be but a half dozen or less, limited to the vaccinated arm and the neighborhood of the vaccine lesions, or they may be very numerous, with a more or less general distribution, in which event there may be some accompanying constitutional disturbance for a short time. There is but little doubt that the great majority of the cases of generalized vaccinia are due to auto-inoculation, the vaccine virus being conveyed from the vaccine vesicle to various parts of the skin by the patient's fingers or those of his attendants. In the rare cases in which there are many lesions with a general distribution, it is believed to be the result of systemic infection with the vaccine virus. This form may resemble variola, but, unlike that affection, is not preceded by an invasive stage and occurs coincidently with vaccination.

In a certain proportion of cases vaccination is attended by a morbilliform erythema, which, beginning about the point of inoculation, spreads over the arm and to the trunk and may become more or less general; instead of being coarsely macular like measles, it may be diffuse, resembling scarlatina. It is usually of short duration, disappearing in the course of a few hours, or at most after a day or two.

Occasionally erythema multiforme and urticaria are observed after vaccination, usually appearing some time before the tenth day; these eruptions do not differ in any respect from the ordinary type.

Far more important, because more serious, are certain bullous eruptions which occasionally follow vaccination after a variable period, usually several weeks, sometimes a month or two. These in most instances resemble in the character of the lesions and the course of the eruption pemphigus; less frequently they are multiform and are made up of erythematous and vesicular patches together with bullæ. Bowen has reported a small series of six cases, all in children, in which the symptoms resembled dermatitis herpetiformis, which pursued a chronic course lasting from five or six months to two or three years. More recently Howe has reported a series of ten cases, all in adults, characterized by an extensive eruption of bullæ appearing a few weeks after vaccination; all these ran an acute course of some weeks, and more than half of them terminated in death.

The exact relationship of these bullous eruptions to vaccination has not yet been definitely determined; it is not known whether they

are directly due to the vaccine virus or to some accidental contamination with some organism not yet identified. The cases reported by Howe present analogies with the cases of acute pemphigus reported by Pernet and Bulloch which occurred in those exposed to infection by decaying animal matter (*vid.* pemphigus).

In eczematous children it occasionally happens that vaccination is followed by an exacerbation of a present eczema or by a recurrence of an old one, a fact which should be kept in mind when asked to vaccinate a child with eczema or an eczematous history. There is no evidence, however, that vaccination is ever the primary cause of eczema.

In a few instances psoriasis has been observed to follow vaccination, the eruption beginning in the vaccination scar, so-called vaccinal psoriasis (*vid.* psoriasis).

In rare instances syphilis and tuberculosis have been conveyed by vaccination when humanized virus has been used, but such unfortunate accidents are no longer to be feared since the general employment of bovine lymph.

As a sequel of vaccination, particularly of imperfect vaccination, a small to large pea-sized bright-red, very vascular tumor occasionally appears at the site of the vaccination, which may last for months. This growth is analogous to, if not identical with, the small neoplasm known as granuloma pyogenicum (*q. v.*)

The recognition of these post-vaccinal eruptions presents no especial difficulties, and their treatment is precisely the same as that of similar eruptions occurring independently of vaccination. Generalized vaccinia is self-limited affection and requires no treatment beyond the protection of the lesion from the patient's fingers.

SCARLATINA

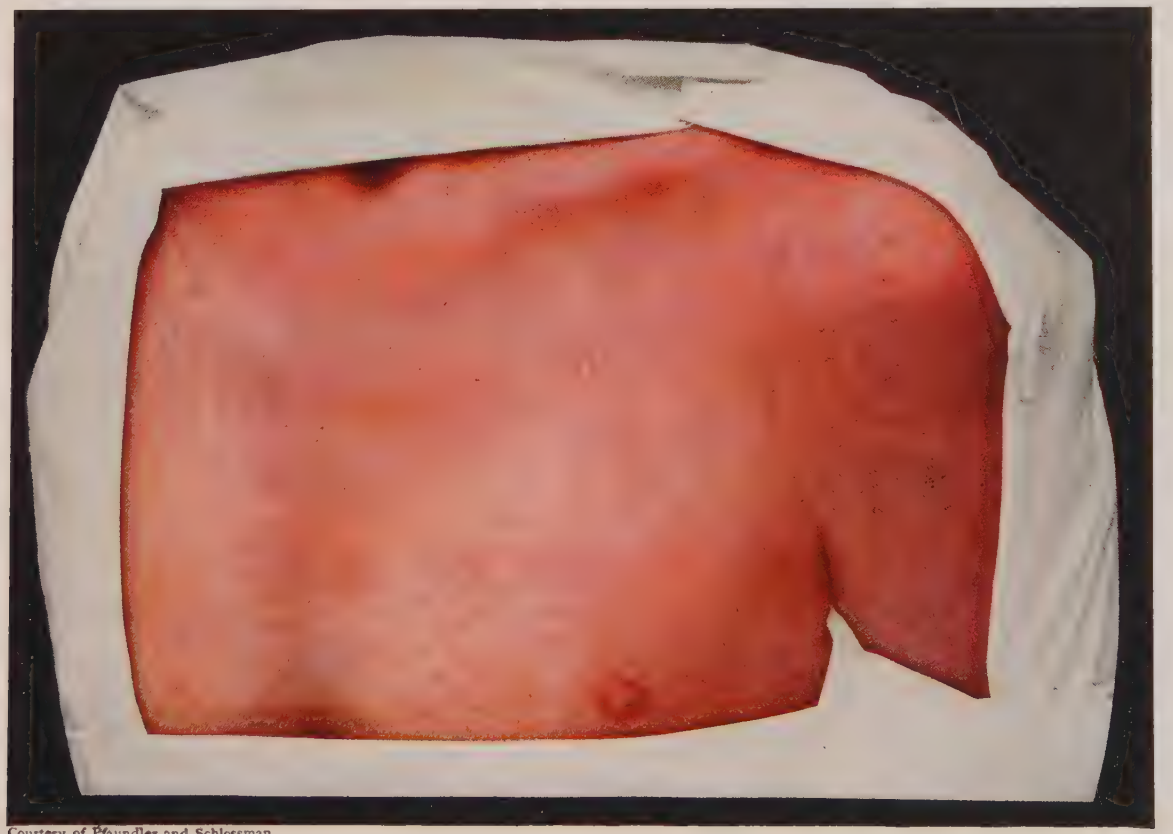
Synonyms.—Scarlet fever; Fr., Scarlatine; Ger., Scharlach, Scharlachfieber.

Definition.—An acute infectious and very contagious disease characterized by fever, usually high, sore throat, and a bright-red punctiform eruption followed by abundant desquamation (Plate XXIII).

Symptoms.—The period of incubation of scarlet fever is shorter and varies more than that of the other exanthemata. Its average duration is from four to seven days, but Murchison's observations led him to the conclusion that it might be only a few hours, and in a considerable proportion of cases was not longer than forty-eight hours.

The attack usually begins suddenly with chills, or in children with convulsions, vomiting, sore throat, and fever. The temperature rises rapidly, so that on the evening of the first day it frequently reaches 103°, 104°, or even higher, and the pulse is accelerated, frequently out of proportion to the temperature, in children at times reaching a rate of 140 to 160 beats per minute, a symptom of some diagnostic

PLATE XXIII



Courtesy of Pfaundler and Schlossman

Scarlet fever.

value. The tongue is covered with a thick yellowish-white fur through which swollen papillæ project here and there as red dots; the uvula, soft palate, and half-arches are bright red, the redness often punctate, and the tonsils more or less swollen.

In the great majority of cases the eruption appears within the first twenty-four hours; much less frequently it is delayed until the second day, and only rarely appears as late as the third. It appears first upon the neck and chest and spreads rapidly to other parts of the trunk, face, and extremities. In the face it is frequently confined to the forehead and cheeks, while the lower part of the nose, the lips, and chin appear pale by contrast; in mild cases the face may escape altogether. It is, as a rule, a bright scarlet, but varies considerably in intensity, and on close inspection is seen to be made up of innumerable fine red dots which in well-marked eruptions may after a time give way to a diffuse redness. The skin is hot and dry and often somewhat swollen, particularly in the face about the lids. In well-developed eruptions it is quite common to see small red papules situated about the hair follicles of the extremities, particularly of the forearms and legs, and it is equally common to see numerous minute vesicles filled with a turbid fluid on the abdomen, in the pubic regions, less frequently upon other parts of the trunk and upon the extremities. If the skin is rapidly stroked with the finger-nail or with a pencil, a white line shortly appears which remains for a minute or more (*tache scarlatinale*), a symptom which is regarded by some authorities as of some diagnostic value.

With the complete development of the eruption, the tongue first becomes red at the tip and sides and then loses its coating, presenting a bright-red surface covered with swollen papillæ which has been aptly compared with a ripe strawberry, the so-called "strawberry tongue," a very characteristic symptom and one rarely entirely absent.

Shortly after reaching its acme, the eruption begins to fade, first upon the face and upper part of the trunk, then upon the extremities, and in the course of three to four days it has completely disappeared, its entire duration being in cases of average severity five to seven days; in mild cases it may be very much shorter, lasting only one, two, or three days, or even only a few hours. With the fading of the eruption the temperature declines, the sore throat disappears, and the patient's general condition gradually improves unless complications appear.

With the fading of the eruption another very characteristic symptom makes its appearance, viz., desquamation. This usually appears first upon the neck and upper part of the chest and spreads thence to other parts of the surface. It varies much in character and quantity, the former depending somewhat upon the region in which it occurs, the latter upon the intensity of the eruption. As a rule it is quite abundant and lamellar in character, the horny epidermis coming

off in large flakes and even in sheets in certain regions. When the eruption has been intense the horny epidermis of the hands and feet may be cast off entire like a glove or sock, and in rare instances the nails are lost. A very characteristic form of desquamation is that which occurs upon the finger-tips, beginning beneath the free border of the nails. In this situation very characteristic denuded patches are often produced by constant picking at the loosened epidermis. In the face and after mild eruptions the desquamation is apt to be rather fine and bran-like and is often scanty. In rare cases of unusual mildness desquamation may not appear at all.

The duration of the period of desquamation is indefinite and depends a good deal upon the severity of the attack. In mild cases it is often completed at the end of two weeks, but in severe cases it may continue for five or six weeks; occasionally it occurs a second time or even oftener.

A more or less general adenopathy is the rule in scarlet fever, the greatest swelling usually occurring in the glands beneath the angle of the jaw; suppuration of these glands is not at all uncommon in severe cases. Schamberg found those in the inguinal region always enlarged.

More or less marked departures from the usual symptoms and course are common. In many instances the symptoms are of so mild a character as to justify Sydenham's opinion of the malady, viz., that it was only "the name of a disease." In such cases there is only a moderate fever, with slight sore throat and an eruption so little marked and so evanescent that it attracts little or no attention from those about the patient, disappearing in the course of a single day or even after a few hours. Many cases of this sort are only recognized when a nephritis develops some weeks later, or when other members of the family develop a well-marked attack. The desquamation which follows is often slight and limited to certain regions, so that it, too, may be overlooked unless searched for.

In marked contrast to these extremely mild cases are those in which the eruption is intense, covering every portion of the surface, often a dark or dusky red, or coarsely macular or blotchy, like measles, accompanied by severe throat symptoms (scarlatina anginosa). The tonsils and soft palate are intensely red and the former markedly swollen, are soon covered with a grayish membranous exudate which extends to the pharynx and upwards to the nose, from which escapes a thin purulent discharge. The glands at the angle of the jaw are enormously swollen and eventually suppurate or at times become gangrenous, leading to extensive destruction of the deep tissues of the neck. Symptoms of sepsis appear, and the patient frequently perishes.

In cases fortunately rare, the infection is overwhelming from the beginning (scarlatina maligna). The temperature rapidly mounts to an unusual height, 107°, 108°, 110°, and in rare instances even

higher; the patient soon becomes delirious or falls into coma; the throat symptoms are of an unusually severe type, and the eruption exhibits more or less irregularity, being frequently dark red and patchy or hemorrhagic, and in some instances death takes place before the eruption appears.

In rare instances the eruption is of a dusky hue and shortly numerous petechiæ and ecchymoses appear with bleeding from the gums, nose, kidneys, bowels, and bladder (scarlatina hemorrhagica). The general symptoms are also of unusual severity; the temperature is high, there is great prostration and severe inflammation of the throat. Such cases almost invariably terminate fatally.

Complications and sequelæ of various kinds are common and frequently add materially to the gravity of the disease. One of the commonest complications, so common indeed that it might very well be regarded as a symptom rather than a complication, is acute nephritis. While this may appear at any time during the attack, it is seen most commonly about the third week. The first symptom noted is a peculiar pallor of the face with œdema of the lids, which is soon followed by anasarca. The urine is at first increased in quantity, but later is usually less than normal and contains varying, sometimes large, amounts of albumen with red blood-cells and casts. Occasionally symptoms of uræmia appear, such as vomiting, diarrhœa, stupor, and convulsions.

Myocarditis, pericarditis, arthritis (scarlatinal rheumatism) are also occasional complications.

One of the commonest sequels of scarlatina is a chronic suppurative inflammation of the middle ear, which frequently persists for many months.

Furuncles, abscesses, gangrenous dermatitis, and occasionally eczema are some of the complications and sequelæ which at times affect the skin.

Etiology and Pathology.—Among the factors which predispose to scarlatina, age occupies a prominent place. It is largely a disease of childhood, although it is infrequent before the first year of life. According to Murchison's statistics, which were based on a very large number of cases, almost 150,000, almost ninety per cent. of the deaths from scarlet fever occur in those under ten years of age; the susceptibility rapidly decreases after puberty, and only 1.57 per cent. of the deaths occur in those over twenty-five. Race is likewise a factor of some importance, the negro being much less susceptible than the European. Surgical operations are occasionally followed by an attack, the wound presumably serving as the port of entry for the infection; there is little doubt, however, that a certain proportion of the cases of so-called surgical scarlatina are scarlatinoid eruptions of septic origin.

The malady is undoubtedly due to a living contagium, but the causative organism has not yet been identified. It is contagious at

all stages, although probably least so in the earliest, and is transmitted by direct contact, by infected clothing or other articles which have been in contact with the patient. The notion long entertained by many, and not yet abandoned, that it is most contagious during the period of desquamation, the contagion being carried by the scales, has been shown to be without foundation. There is quite convincing evidence that it is occasionally transmitted by milk, a number of epidemics having been traced to this source.

A large number of organisms of various kinds have been found in the skin, discharges from the throat and ears, and in the blood, but none of these has been shown to have a causal relationship to the disease. Streptococci are present in a large proportion of cases and have been believed by a number of investigators to be the primary etiological factor, but this opinion has been shown to be incorrect by more recent investigations. There is little doubt, however, that this organism is responsible for many of the inflammatory and suppurative complications which are so common. Mallory has recently described a protozoön found in the skin of scarlet fever patients to which he has given the name *cyclaster scarlatinalis,* which he thinks may have a causal relationship to the malady, but this still remains to be proved.

As a rule there is a more or less marked leucocytosis, the degree depending upon the severity of the attack; in severe and fatal cases there may be 30,000 to 40,000 white cells (Kotschetkoff). An eosinophilia is usually present after the first two or three days, which continues to increase until the disease reaches its acme; exceptions, however, have been noted.

The eruption is almost entirely due to a tremendous hyperæmia of the skin, the histological changes being comparatively slight. According to Unna, there is an enormous dilatation of all the vessels of the cutis, with a very slight cellular exudate. In the epidermis there is a parakeratosis which leads to scaling, but the rete shows neither œdema of its cells nor intercellular emigration of leucocytes.

Numerous pathological changes are present in the viscera which are in part the result of high temperature and in part due to the toxæmia. The kidneys show the changes characteristic of acute interstitial nephritis.

Diagnosis.—Typical cases of scarlet fever usually present such well-marked and characteristic symptoms that the diagnosis is made without difficulty, but quite the reverse is true of the atypical cases so frequently met with. The sudden onset with high temperature and a disproportionately rapid pulse, vomiting, sore throat, and a red punctate rash, form a collection of symptoms readily recognized, but any one or several of these may be absent or so little developed as to make a positive diagnosis most difficult at times.

The diseases with which it is most likely to be confounded are

recurrent scarlatiniform erythema, measles, rötheln, drug and antitoxin rashes, smallpox, tonsilitis, and diphtheria.

Recurrent scarlatiniform erythema, as its name indicates, resembles scarlatina at times very closely, but the eruption is as a rule diffuse and only very exceptionally punctiform; constitutional symptoms are frequently absent, or if present are much less pronounced than in the latter disease; sore throat is rarely a symptom, and strawberry tongue is never present; desquamation is usually abundant and begins earlier than in scarlet fever. In most cases there is a distinct history of recurrences.

At times the eruption of scarlatina is blotchy and resembles measles, but it appears much earlier than in that affection and the catarrhal symptoms so characteristic of the latter are wanting.

While scarlatina and rötheln are usually very readily differentiated, the distinction between the two may at times be attended by considerable difficulty when the eruption of the latter is so abundant that its macular character is lost; but the high fever, the vomiting, and sore throat which characterize the onset of the former are absent in the latter. The eruption of scarlet fever begins upon the neck and chest and is usually quite scanty in the face, while that of rötheln begins and is most abundant in the latter region. Desquamation in the latter is frequently altogether absent, and when it occurs is scanty and bran-like.

The erythema, which is at times seen in the invasive stage of smallpox, may be decidedly scarlatinoid, but its usually evanescent character and the appearance of the variolous eruption will serve to distinguish it from scarlatina.

Quinine, belladonna, and its alkaloid atropin, salicylic acid, and its salts, antipyrin and sera employed therapeutically occasionally give rise to a scarlatinoid erythema, but it lacks the punctiform character of the rash of scarlet fever and is, as a rule, but not invariably, unattended by elevation of temperature and sore throat.

Anginose scarlatina is at times mistaken for diphtheria, but the presence of the eruption and the absence of the Klebs-Loeffler bacillus would exclude the latter. In the cases in which diphtheria is accompanied by an erythematous eruption the differential diagnosis may be very difficult and can only be made after a most painstaking consideration of all the symptoms.

Prognosis.—A guarded prognosis should be given in every case of scarlatina, since even the mildest cases occasionally terminate unfavorably. Unfavorable symptoms are high temperature with a very rapid pulse, lividity and irregular development of the eruption, severe inflammation of the throat with great enlargement of the cervical glands, and nephritis in the early stages of the attack. In children under five years of age the mortality is two or three times greater than in older children. Hemorrhagic scarlatina is almost invariably fatal.

Treatment.—The patient should be isolated and kept in bed even in the mildest cases, and should be put upon a milk diet, which should be continued as long as the fever lasts. High temperature is best and most safely controlled by repeated cold sponging or the tepid bath; in the treatment of hyperpyrexia the cold bath is the most efficient measure. Antiseptic sprays and gargles, when the patient is old enough to use the latter, are to be employed for the throat. Frequent inunctions with cold cream, or lanolin and oil of sweet almond or other bland ointment, are useful in allaying the heat and itching which are at times most annoying. The various complications are to be treated as they arise according to the principles of general medicine.

The only efficient prophylactic measure is complete isolation.

MEASLES

Synonyms.—Rubeola; Rougeole; Ger., Masern; Ital., Morbilli.

Definition.—An acute contagious and infectious febrile disease, occurring chiefly in children, characterized by lacrymation and photophobia, coryza and cough, and a dull-red macular eruption (Plate XXIV).

Symptoms.—After an incubation period of about ten days the attack begins rather suddenly, as a rule, in very mild cases gradually, with fever, sneezing, cough, lacrymation, and photophobia, and in children sometimes with convulsions. The temperature rises rapidly, reaching 102° to 104° in the evening of the day of the attack; on the second day it commonly declines and may approach or reach the normal on the morning of the third day, but soon begins to rise again. On the fourth day of the illness, exceptionally late on the third or early on the fifth, the eruption appears, first on the sides of the neck behind the angles of the jaw, and then on the face, where it is usually most abundant and often confluent, with considerable swelling. It begins as small red, slightly elevated macules, which may be distinctly felt upon passing the hand over the skin, and which as they enlarge and increase in numbers frequently form crescentic patches. This crescentic arrangement, which is, in the author's opinion, unduly emphasized as a symptom in many text-books, is frequently absent. With the increase in size and number of the macules the eruption presents a coarsely macular or blotchy appearance which is quite characteristic. With the appearance of the eruption the fever continues to rise, the catarrhal symptoms increase in severity, there is increased cough with symptoms of bronchitis, and in a considerable proportion of cases diarrhœa. The eruption spreads rapidly over the trunk and extremities, reaching its full development in about thirty-six hours after its first appearance, and at the same time the fever reaches its acme, not infrequently 104°–105°. Shortly after reaching its acme the eruption begins to fade, first upon the face and then in quick succession upon the trunk and extremities; the skin becomes

PLATE XXIV

Courtesy of Pfaundler and Schlossman

Measles.

yellowish or brownish and usually remains so for some days, and a branny desquamation appears, which lasts for five days to a week, but in severe cases it may last for ten days, while in mild ones it may be absent altogether. More or less itching usually accompanies the eruption.

An eruption also occurs upon the mucous membranes of the mouth, where it appears decidedly earlier than upon the skin, as early as the second day. It consists of small, bright-red, irregularly shaped spots situated upon the mucous membranes of the cheeks and lips, which contain in the centre a minute bluish-white point. Although these spots were first described by Flindt some years ago, they are known as Koplik's spots since Koplik has more recently called attention to them; they are regarded as pathognomonic of measles by most authorities.

Like the other exanthemata, measles occasionally exhibits various anomalies in its symptoms and course. At times the catarrhal symptoms are extremely mild or absent altogether, an anomaly seen, according to Thomas, in young children especially. The eruption may be absent, while the catarrhal symptoms present the usual features; it is probably true, however, as Thomas has observed, that the "diagnosis of measles without exanthem is more often made than justified."

Anomalies are occasionally observed in the character, distribution, and extent of the eruption. At times the eruption is purely macular, the spots being quite smooth and imperceptible to the touch, *morbilli lævres* of the older writers, or, on the other hand, it may be quite unmistakably papular. Occasionally the eruption is associated with miliary vesicles, and in rare cases bullæ are present, pemphigoid measles (Henoch, DuCastel, Baginsky, Zuhr, and others). Not very infrequently the spots are bluish and do not disappear on pressure, owing to a slight extravasation of blood. Variations in the size of the macules are likewise observed; at times they are unusually large or very small, and in exceptional cases instead of being general the eruption is limited to certain regions. In rare instances it may return after it has begun to fade, the reappearance being accompanied by a rise in temperature.

Exceptionally the infection exhibits unusual severity, all the symptoms being of an exaggerated character; the temperature reaches an unusual height, 106°–107°, the patient is extremely restless or may be stuporous, and death may occur before the eruptive stage has been reached.

The most malignant variety is the hemorrhagic or "black measles," a form fortunately rare, most common in those who have been weakened by previous disease or other causes. The attack presents unusually severe symptoms from the beginning; the temperature is high, the eruption is of a dusky hue or violaceous, petechiæ and ecchymoses appear with hemorrhage from the nose, bowels, kidneys, and bladder.

Various complications may arise during the course of the disease, the most frequent being those referable to the respiratory apparatus. Bronchopneumonia is a very frequent and dangerous complication, being the cause of death in a very large proportion of the fatal cases. Diarrhœa, sometimes accompanied by tenesmus and bloody stools, is an occasional complication.

Measles apparently at times predisposes to tuberculosis, since in a considerable number of instances some form of the latter has been observed to follow an attack of the former; acute miliary tuberculosis, disseminated lupus vulgaris (Du Castel, Adamson, Abraham, and a number of others), lichen scrofulosorum (Haushalter), although by no means of frequent occurrence, have been noted as sequelæ.

Furuncles, cutaneous abscesses, and gangrene of the skin are occasional sequellæ affecting the skin. The last-named in rare instances occurs about the mouth as noma or cancrum oris, an extremely fatal affection; much less frequently it attacks the prepuce or vulva. Otitis media, although much less frequent than after scarlatina, is not very uncommon after measles.

Etiology and Pathology.—Measles is highly contagious, the most contagious of all the exanthemata. It is usually contracted by direct contact with an infected individual, and very infrequently through the intermediation of clothing, etc.; indeed, the possibility of the latter mode of transmission is denied by a number of authorities. It occurs most frequently in childhood between one and ten years of age, but is decidedly infrequent before the sixth month. Although without doubt due to a living contagium, this has not yet been discovered. A number of microörganisms have been found in the buccal and nasal secretion by a considerable number of investigators, but none of these has yet been satisfactorily shown to have a causal relationship to the malady. Goldberger and Anderson have recently succeeded in reproducing the disease in monkeys by inoculating them with blood of human beings obtained in the late pre-eruptive stage, or within twenty-four hours after the first appearance of the eruption; they have also determined the infectious character of the buccal and nasal secretion.

Notwithstanding the striking appearance of the eruption, the pathological alterations in the skin are slight. According to Unna, there is, in addition to the hyperæmia, a spastic œdema of the cutis, most marked about the coil-glands, the follicles, and the muscles which lie in widely dilated spaces. Neumann found a moderate perivascular and perifollicular exudate of round cells in the papillæ. In the macules, however, Unna found no cellular exudate. In the epidermis the granular layer disappears in part, and the middle and upper portion of the horny layer separates from the basal portion, producing desquamation. Catrin (quoted by Unna) has described certain colloid changes in some of the deep epithelial cells.

Diagnosis.—The affection which resembles measles most closely is rubella or rötheln, German measles. In the former the eruption is preceded by a prodromal period of four days, marked by decided fever and catarrhal symptoms, and is dark-red and coarsely macular; in the latter the prodromal period is often less than twenty-four hours and the eruption may be the first sign of illness; the color of the eruption is lighter than that of measles, and the macules are much more uniform in size and more evenly distributed. Koplik spots are present in the former, absent in the latter.

Anomalous forms of scarlatina occasionally exhibit a coarse and blotchy instead of the usual punctiform eruption, which may resemble the eruption of measles, but the coryza, photophobia, and cough characteristic of measles are absent.

Measles is occasionally mistaken for smallpox when the latter is prevalent, but the associated coryza and cough, the soft "velvety" feel of the maculopapules, quite unlike the hard, shotty feel of the papules of the latter, are the distinguishing features.

Occasionally measles is mistaken for the macular syphiloderm, and vice versa, but the latter is not preceded by a distinct prodromal period and never presents catarrhal symptoms; other characteristic symptoms of syphilis are also likely to be present.

Certain drugs, such as copaiba, cubebs, antipyrin, and quinine, and sera at times, produce morbilliform eruptions, but these are never accompanied by coryza and cough.

Treatment.—The patient should be carefully isolated in a well-ventilated and slightly darkened room, which should be kept at an even temperature of 68° to 70°, and should be put to bed and kept there until the temperature has been normal for some days; in severe cases, with well-marked bronchial or pulmonary symptoms, he should be kept in bed at least a week after the disappearance of fever. Tepid sponging and inunctions with cold cream, if there is much itching, may be used with advantage. High temperature is best combatted by the tepid bath. The diet should consist largely, if not exclusively, of milk, especially in children. The various complications, such as pneumonia and diarrhœa, are to be treated in the usual manner.

Prognosis.—The prognosis in uncomplicated cases is very favorable, but owing to the frequency with which complications occur, especially pneumonia, the mortality is considerable; it varies greatly, however, in different epidemics. In debilitated children and pregnant women it is a dangerous malady. In institutions for children, such as foundling asylums, hospitals, etc., the mortality is frequently very high. Hemorrhagic measles is usually fatal.

RUBELLA

Synonyms.—Rubeola; German measles; Bastard measles; Fr., Rougeole fausse; Ger., Rötheln.

Definition.—An acute contagious, mildly febrile, epidemic disease

occurring chiefly in children, characterized by a macular eruption.

Symptoms.—The period of incubation of rubella is much less definite than that of the other exanthemata. According to most authorities, it is about twelve to fourteen days or longer, but it is not very infrequently decidedly shorter. Thomas puts it at two and a half to three weeks; Griffith, in an epidemic in an institution, noted an incubation of five days in one case, but in the greater number it was about eleven days; Michaelis was able to fix it with precision at nineteen days in two of his own children.

After a few hours of malaise, with mild catarrhal symptoms, such as sneezing with cough and mild suffusion of the conjunctivæ, or without any premonitory symptoms, the eruption appears, usually upon the face first, but occasionally upon the trunk and extremities, and spreads rapidly to other regions. It consists of pin-head to pea-sized pink or rosy round or oval spots, sometimes very slightly elevated, but for the most part smooth and non-elevated, scattered about without any definite arrangement, and usually discrete except upon certain regions, such as the face or upon parts subjected to pressure, where it may become confluent, forming diffuse erythematous patches. As Thomas has noted, it reaches its maximum upon different parts of the body at different times, so that it may have already faded upon the face while it is at its acme upon the trunk or extremities. While some degree of fever is present in the majority of cases, the temperature reaching 101°–102° in the evening, or exceptionally going higher, it is absent in a large number of cases, this symptom varying considerably in different epidemics. It commonly falls to normal on the second day, but in rare cases may continue for some days. The eruption reaches its maximum development upon the second day, after which it rapidly fades, and by the third, or at most the fourth, day has entirely disappeared, often leaving for a very short time a faint brownish stain, and sometimes followed by a scanty branny desquamation which lasts for a day or two. Itching is an occasional symptom. There is usually sore throat of a mild character from the beginning, with diffuse, exceptionally punctate (Griffith and others), redness of the soft palate, half-arches, and inner surface of the cheeks. The posterior cervical lymphatic glands are almost invariably enlarged, forming a readily palpable and sometimes visible chain on each side of the neck.

Not very infrequently the eruption presents anomalous forms Griffith recognizes two types of variation from the usual form, viz., a morbilliform type which may resemble measles very closely, and a scarlatiniform type which simulates the eruption of scarlet fever. Complications are rarely observed.

Etiology and Pathology.—Rubella is chiefly a disease of children, but is seldom seen before six months of age; although infrequent in adults, it is by no means rare. Thomas believes that the susceptibility to it steadily diminishes after puberty, and at forty is almost

lost. It is probably contagious at all periods, but there is some difference among authorities as to the degree of contagiousness and the period of its greatest infectiousness. The infecting organism is still unknown.

The eruption is due to a capillary hyperæmia of the papillæ and upper portion of the corium, which is occasionally followed by a slight inflammatory exudate in some places and in some of the macules (Thomas).

Diagnosis.—Rubella is to be distinguished from measles and scarlatina, both of which it may resemble very closely.

It differs from measles by the absence or very short duration of prodromal symptoms, the eruption often being the first sign of the disease; by the lighter color and much more uniform distribution of the eruption; by the very much less pronounced character of the catarrhal symptoms, and by the absence of fever or its very trifling degree when present, and its early disappearance.

Although the eruption of rubella in most instances is readily distinguished from that of scarlatina, it occasionally resembles the latter to a marked degree, but the mild character of the early symptoms—the absence of high fever, vomiting, severe sore throat with swelling of the tonsils and enlargement of the glands at the angle of the jaw—symptoms which characterize the latter, are usually sufficient to make a positive differential diagnosis, although it occasionally happens that the differentiation is extremely difficult. Desquamation in the former is often absent and very slight and of short duration when present, while it is often profuse in scarlet fever and almost never absent.

Prognosis and Treatment.—The prognosis is, in the vast majority of cases, very favorable, although occasionally death occurs in feeble or poorly nourished children.

The patient should be confined to a well-ventilated and uniformly heated room and put upon a light diet for a few days, but may be allowed to remain out of bed unless there is decided fever. Drugs are seldom required.

VARICELLA

Synonyms.—Chickenpox; Fr., Varicelle, Verolette; Ger., Varicellen, Wasserpocken, Spitzblattern.

Definition.—An acute, contagious, mildly febrile disease occurring chiefly, but not exclusively, in children, distinguished by a vesicular eruption coming out in successive crops (see Plate XXII).

Symptoms.—The period of incubation exhibits considerable variation, but is in most cases about fourteen days, although Welch and Schamberg observed an incubation of twenty-one days in one case and Trousseau one of twenty-seven days.

Prodromal symptoms are in most cases absent, although the eruption may be preceded by a period of malaise and mild fever lasting a few hours or a day. In adults a prodromal stage of one day, much

less frequently of two or even three days, is occasionally observed, a fact often of much importance in differential diagnosis. In the great majority of cases the eruption is the first symptom of illness and makes its appearance upon the trunk first, as a rule, and shortly afterwards upon the face, scalp, and extremities. It is usually most abundant upon the trunk (Fig. 129) and least so upon the wrists, hands, ankles, and feet. It is often sparse upon the face even when abundant upon the trunk. Although it has been stated by some authors that the palms and soles escape, differing thus from smallpox, this is not strictly correct, since it does occur occasionally in these regions, although much less frequently and much less abundantly than in the latter affection. The lesions begin as small red spots which quickly become vesicles filled with a fluid which is at first clear, but later becomes turbid and in a limited number purulent. The vesicles are surrounded by an inflammatory halo, are discrete even when present in large numbers, and vary in number from a dozen or two to many hundreds or thousands. More or less itching is a common symptom and may be at times quite severe, so that many of the vesicles are broken by scratching and covered with small blood-crusts. The eruption appears in successive crops at intervals of a day or two and continues to come out for four or five days, or exceptionally for a week, and as a consequence all stages of the lesions, vesicles, pustules, and crusts are present simultaneously. The duration of the individual lesions is short; after two or three days they dry up into small brownish crusts which fall after a few days, leaving small transient hyperæmic spots, or when the lesions have become well-developed pustules, as happens in a limited number, a small permanent scar. A certain small number of the lesions are abortive, appearing as small papules which soon vanish.

As a rule a few vesicles are seen upon the mucous membrane of the hard and soft palate, the posterior wall of the pharynx, and exceptionally upon the tongue; Hennoch observed them in one case upon the conjunctiva and gums.

Along with the eruption some elevation of the temperature occurs, from 99° to 101°, but occasionally it reaches a considerable height, as much as 104°–105°. The fever is usually of short duration, in mild cases disappearing in twenty-four hours or less, and seldom lasting longer than two or three days in any case.

Chickenpox is rarely attended by complications or followed by sequelæ. As a fairly frequent occurrence, some of the vesicles spread peripherally after the manner of those of impetigo, and may reach the size of a coin (impetigo varicellosa, Welch and Schamberg).

Under the name varicella gangrenosa, Hutchinson some years ago described a rare and at times grave complication. Instead of the crust being cast off in the usual manner, ulceration occurs beneath it, a blackish slough is formed, which after a time is cast off, leaving a sharp-cut ulcer of variable depth from a quarter of an inch to an

FIG. 129.—Varicella.

inch in diameter. Or the vesicle, instead of crusting over, is transformed into a bleb, sometimes with bloody contents, which after a time becomes a slough. The number of lesions which undergo this transformation varies greatly; when any considerable number are thus affected there is pronounced constitutional disturbance, with a decided rise in temperature, and death may follow with symptoms of sepsis.

Porter has reported a case in which the eruption, widely distributed, was confluent, partly bullous, and hemorrhagic; Knowles has reported one terminating fatally in which the eruption was hemorrhagic and gangrenous. Cases such as these are, however, extremely rare. In exceptional cases nephritis may occur as a sequel (Hennoch, Beardsley).

Etiology and Pathology.—Although the great majority of cases of chickenpox occur in childhood, between the first and tenth years, it is by no means so rare in adults as is asserted by a number of writers. Thomas, for example, has stated that he never saw a case in an adult, but Welch and Schamberg saw two score and more in a few years, and the author has seen at least a score in those past twenty.

The affection is very contagious, and is usually contracted by direct contact. The infecting organism has not yet been identified, and the manner in which it obtains entrance into the economy is as yet unknown. A number of attempts have been made at various times to inoculate it, but in most instances with negative results. Steiner, however, succeeded in eight out of ten children inoculated, and fixed the period of incubation in the inoculated cases at eight days. Quite recently Kling has reported no less than fifty-eight successful inoculations. According to his observations, the incubation period is, as Steiner found, eight days, and successful inoculation confers immunity upon the inoculated subject. Out of ninety-five children in the General Hospital for Children in Stockholm during an epidemic of varicella, thirty-one were successfully inoculated and all of these but one escaped, while out of sixty-four not inoculated, twenty-four were attacked.

According to Unna, the varicellous vesicle begins at the hyperæmic spot with a reticulating liquefaction of a few of the cells in the central and upper part of the rete, and confluent cavities are thus formed, divided by septa composed of compressed cells which have not been liquefied. The younger cells at the bottom of the vesicle undergo "ballooning colliquation" by which they are transformed into large, round, oval, or pear-shaped cells containing from two to twenty or more nuclei. The contents of the vesicles consist of finely granular coagulated fibrin and a few ballooned cells. In the cutis there is marked dilatation of the vessels with enlargement and multiplication of the cells around them.

Diagnosis—The disease with which chickenpox is most likely to be confused is smallpox, and while in most cases the two are readily

differentiated, the distinction between severe chickenpox and mild smallpox of the type which has been prevalent in the United States for some years past may present considerable difficulty; indeed, may at times be impossible without twenty-four to thirty-six hours' observation.

The eruption of chickenpox is not preceded by prodromal symptoms; that of smallpox appears after a prodromal period of three days during which there is pronounced constitutional disturbance, such as vomiting, headache, severe lumbar pain, and high fever. The eruption of chickenpox is vesicular from the beginning; that of smallpox begins as papules which become umbilicated vesicles and finally pustules with thick crusts. The eruption of chickenpox appears first upon the trunk where it is most abundant, and is scanty upon the face, sometimes altogether absent, while that of smallpox appears first upon the face, where it is usually very abundant. The eruption of chickenpox appears in successive crops, usually for four or five days; that of smallpox comes out continuously until it is completed, usually in twenty-four to forty-eight hours.

Chickenpox and impetigo contagiosa are occasionally mistaken for one another, but the vesicles of the latter are as a rule quite limited in number, are often confined to the face, show a marked tendency to peripheral extension, frequently reaching the size of a coin, and are auto-inoculable.

Prognosis and Treatment.—The prognosis of uncomplicated chickenpox is invariably favorable.

Treatment is altogether expectant. The patient should be confined to the house until the crusts have fallen, and if itching is a troublesome symptom a lotion containing from one to one and a half per cent. of phenol with a small quantity of glycerin will usually afford prompt relief.

CHAPTER IX

INFLAMMATIONS DUE TO VEGETABLE PARASITES

A very considerable and important group of cutaneous affections is the result of invasion of the skin by various fungi belonging botanically to the moulds and yeasts. Some of these are limited in their ravages to the skin and its appendages, such as the hair and the nails, while others not only attack the skin, but may, and frequently do, invade the subcutaneous tissues and even the viscera, giving rise to general infection. The majority of them are contagious, while others occur only as the result of indirect inoculation. The amount of disturbance produced in the skin by these organisms varies greatly; in some there is but little, oftentimes no, change beyond discoloration and desquamation; in the majority, however, there is more or less inflammation and in some deep-seated changes and destruction of tissue.

The diseases belonging to this group are: Favus; the trichophytoses, or several varieties of so-called ringworm; tinea versicolor; erythrasma; pinta; actinomycosis; blastomycosis, and sporotrichosis.

Owing to the character of the tissue-changes which distinguish them actinomycosis, blastomycosis and spirotrichosis have been placed among the Infectious Granulomata. Since inflammatory changes are as a rule, to which there are very few exceptions, wholly absent in tinea versicolor, it is considered among the pigmentary disorders.

FAVUS

Synonyms.—Tinea favosa; honeycomb ringworm; Fr., Teigne faveuse; Ger., Erbgrind.

Definition.—A parasitic disease of the skin due to a vegetable parasite, the *Achorion Schönleinii*, characterized by cup-shaped crusts, sulphur-yellow when recent, a dirty yellowish gray when old.

Symptoms.—While no part of the surface of the skin is exempt from the disease, its most frequent site is the scalp (Plate XXV). In this region it begins with the appearance of small slightly reddened spots about the hairs, which presently show a thin scale and then a small bright-yellow crust pierced by a hair. This yellow crust slowly enlarges in circumference and thickness, and even when quite small presents a central depression; as it grows it becomes distinctly cup-shaped. So long as the crusts remain discrete they preserve this cup-shaped character, but when they are at all numerous and close together this is soon lost by their coalescence, and the affected area is in time covered with a grayish-yellow friable mass in which the cups are no longer apparent. The favus cup, or scutulum, as it is called, is composed almost entirely of fungus elements mixed with some epidermic scales. In its earliest stages the under surface is

PLATE XXV

Favus of the scalp.

soft and putty-like, but it soon becomes dry and friable. Underneath the crusts the scalp is red, smooth, often moist, and not infrequently suppurating. In time, owing to atrophy from pressure and superficial ulceration when suppuration occurs, it becomes thin and cicatricial. The hairs are early affected; they become dry, lustreless, split up and broken off; they may be readily extracted, and frequently fall out spontaneously, so that areas of baldness, which are often permanent, owing to complete atrophy or destruction of the follicles, are produced. The extent of surface involved varies; often there are only a few small finger-nail-size patches scattered over the scalp, but the entire scalp may be affected, which in time is transformed into an extensive cicatricial surface from which the hair has completely vanished except a narrow fringe in the occipital region or a few small tufts here and there. In cases in which there are extensive crusts, a peculiar mouse-like odor is quite perceptible. In the majority of cases there is more or less severe itching, and the scratching to which this leads adds to the amount of inflammation and is often followed by secondary pus infection. The scalp is excoriated and bleeds, and the crusts in consequence become brown or blackish owing to admixture of pus and blood. In those cases accompanied by a considerable degree of inflammation with suppuration, the cervical glands are frequently markedly enlarged.

More or less variation from the ordinary type of the disease may occur upon the scalp. Dubreuilh divides these atypical forms into three varieties: First, a pityriasic form, which may readily be confounded with psoriasis of the scalp; second, an impetiginous form in which pustules resembling impetigo are present; and, third, an alopecic form in which there are areas of baldness surrounded by a border of inflamed follicles, resembling erythematous lupus of the scalp or a folliculitis decalvans.

Favus of the scalp is a chronic affection, its duration frequently running into years, even fifteen or twenty. It commonly begins in childhood or less frequently in youth.

Favus of the body or of the non-hairy skin differs usually in no essential particular from the disease as seen upon the scalp; there are the same cup-shaped yellow crusts which, at first discrete, eventually coalesce, when numerous, to form thick, uneven, often bark-like masses which in neglected cases (Fig. 130) may be a half inch or more in thickness and may cover the greater part of an extremity, or even a considerable portion of the whole cutaneous surface. In a certain proportion of cases it may begin like the ordinary ringworm of smooth surfaces with a round, scaly, red patch, about the periphery of which there are numerous small vesicles; in the course of eight to ten days the small, yellow, characteristic cups appear, usually around a lanugo hair, which undergo the usual evolution. While commonly associated with favus of the scalp, it may exist upon the body and extremities alone. On the other hand, it frequently exists for years

FIG. 130.—Favus.

on the scalp without involvement of the trunk or extremities. The spread of the disease is commonly decidedly more rapid on non-hairy parts than on the scalp. Considerable inflammation of the skin beneath the crusts, with suppuration and ulceration, may occur here, as on the scalp, but as a rule scarring is much less marked after recovery than in the latter region.

The mucous membranes may quite exceptionally be the seat of scutula. These have been observed on the glans penis, and Kaposi and Kundrat have reported a remarkable case of extensive favus in which the patient died with symptoms of gastro-intestinal inflammation; at the autopsy ulcers and swellings were found in the gastro-intestinal mucosa which were shown to contain the fungus of favus.

In rare instances it invades the nails. When these are attacked the infection commonly begins beneath the free border, where small irregularly shaped yellowish spots appear, due to the presence of small collections of the achorion which show through the translucent nail-substance. As the infection slowly extends backward, the nail itself is infected; it becomes thick, uneven, dry, lustreless, and brittle, and the nail-plate is lifted up from the nail-bed by an accumulation of elements of the fungus and horny epithelial cells. In long-standing cases when the disease has invaded the entire nail, involving the matrix, marked deformity may result, or the nail may be practically destroyed. It may be limited to the nail of a single finger or all may be attacked; the nails of the toes may likewise be implicated, but these are much less frequently invaded than the finger-nails. In the great majority of cases infection occurs through scratching other infected regions, such as the scalp, and it is somewhat remarkable that it does not occur oftener; quite exceptionally it exists alone, and may continue without infection of other regions for years.

Etiology.—Favus is the result of the invasion of the skin, more particularly of the hair follicles, by a vegetable parasite named after its discoverer, Schönlein, *Achorion Schönleinii*. It is always the result of direct transference from one individual to another, or, in rare instances, from some one of the lower animals, such as the cat, the dog, mice, rabbits, and from fowls. The cat is without doubt the commonest animal source, acquiring the diseases from mice, animals which are especially liable to it. The author has seen one instance in which a child certainly acquired it from a kitten with which she played, which was found to have an exquisite scutulum upon the belly; and another in which there was considerable evidence to show that it had been acquired from a dog. In the great majority of cases it begins in childhood, but may occur in adults, even in middle age. The affection, although common in certain parts of Europe, such as Italy, France, Austria, Poland, and Russia, these last two particularly, is quite rare in natives of the United States, practically all the cases seen here being immigrants from some one of the above-mentioned countries of Europe. Favus of the smooth parts of the skin and of

the nails is in the great majority of cases secondary to favus of the scalp; favus of animal origin, however, is practically limited to the non-hairy parts of the skin.

There is apparently but little doubt that children whose powers of resistance have been lowered by insufficient or improper food and unwholesome surroundings, such as prevail among the poorer classes, are much more commonly affected than the healthy and robust. Children the subjects of favus are almost without exception thin and pale.

All the pathological changes characteristic of favus are the result of the invasion of the skin and its appendages by the achorion. The elements of this fungus, spores and mycelia (Fig. 131), are to be found in the hairs, nails, and epidermis, and may be quickly and easily demonstrated microscopically by placing a minute portion of a crust, a hair, or scrapings from beneath the nail upon a slide with a drop of liquor potassæ, covering it with a cover-glass rather firmly pressed down, and examining it after a few minutes with a power of 250 to 300 diameters. As the crusts are made up almost entirely

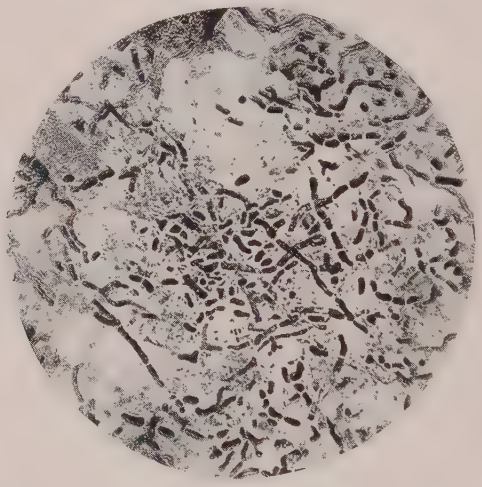


FIG. 131.—Favus. Achorion Schönleinii.

of spores and mycelia, which also exist in great abundance in affected hairs and nails, there is no difficulty in finding the fungus.

The spores are round, oval, elongate, or irregularly quadrilateral, shining, very pale, greenish-yellow, structureless bodies having a diameter of about 5 microns. The mycelia are long, flat, curved and dichotomously branching tubes with occasional transverse septa having a diameter varying from three to four microns.

The part usually first invaded is the follicular infundibulum, where the scutulum or favus cup has its beginning (Fig. 132). As the fungus multiplies it extends not only toward the surface, but downwards into the follicle, invading the hair, disrupting its shaft, and frequently destroying the papilla with resultant permanent loss of hair. The

hair-shaft contains numerous mycelial threads and long rows of quadrilateral or oval spores running parallel with its long axis. The scutulum consists of spores, mycelia, and epithelial débris, and is situated between the horny layer of the epidermis and the rete mucosum. The marginal portion is made up of mycelial threads running at right angles to the surface, while the central portion is composed of spores and mycelia running in all directions. A vertical section of a scutulum shows it embedded in the epidermis much as the stone is set in a ring. The epidermis about its margin is increased in width, its inter-

FIG. 132.—Favus. *F, C*, favus cup, scutulum, imbedded in the rete mucosum; *F*, follicle. Note that the favus cup is largely composed of fine threads, mycelia.

papillary projections greatly elongated, but beneath it it is markedly thinned, the result of pressure. In the papillary and subpapillary portions of the corium there is a considerable cellular exudate of round cells, and, according to Unna, some plasma cells. Exceptionally, owing to the penetration of the corium by the fungus, a granuloma resembling that sometimes found in trichophytosis is produced. Darier and Halle have described such a case in which the corium contained a cellular infiltration made up of polymorphonuclears, giant-cells and lymphoid cells.

A number of authors, such as Frank, Unna, and Neebe, maintain

the plurality of the species of the achorion, the latter having described no less than nine varieties. In all probability, however, what have been regarded as separate varieties are in fact only variations due to differences in mode of cultivation and the conditions of growth, such as temperature and soil. In two hundred cases of favus of the scalp, Sabouraud never found but one variety, the *Achorion Schönleinii*. There are, however, at least four fairly well-distinguished varieties of achorion producing favus in the lower animals: the *Achorion Quinckeanum*, found in mice and transmissible to man, attacking when so transmitted smooth or non-hairy surfaces, but never found on the scalp; *Achorion gallinarum*, producing favus in fowls; *Oöspora camna*, the organism causing favus in the dog and probably, although quite rarely, inoculable in man; and the *Achorion gypseum*, producing an affection resembling deep trichophytosis.

Diagnosis.—The diagnosis of favus is usually made without much difficulty, but occasionally it may be confounded with other diseases, such as eczema, psoriasis, seborrhœa, erythematous lupus, and ringworm or trichophytosis.

In the first three named affections the crusts or scales never present the bright sulphur-yellow color of the recent crusts of favus, nor the cup shape of the discrete crusts. There are never scarring and atrophy, and never patchy baldness; when loss of hair occurs it occurs as a diffuse thinning. No organism is to be found in the crusts and scales of these diseases, while the crusts of favus, as has already been mentioned, are composed almost entirely of the spores and mycelia of the achorion.

While in erythematous lupus of the scalp scarring and atrophy with areas of baldness frequently occur, resembling at times that which occurs in favus, there are never at any time the characteristic cup-shaped yellow crusts.

When the crusts have been completely removed, as is often done by arriving immigrants just before coming into port, and nothing but scarring and atrophy are perceptible, an immediate positive diagnosis may be difficult or impossible. Under such circumstances a period of two or three weeks without washing or applications of any sort will usually be sufficient to produce a new growth of characteristic cups.

The differential diagnosis between favus and ringworm of the scalp sometimes presents considerable difficulty and cannot always at once be made even with the aid of the microscope, since the achorion and the trichophyton may at times be differentiated microscopically with difficulty. The employment of cultures with suitable media or inoculation in mice will solve the difficulty.

As a rule, however, the achorion may be distinguished from the trichophyton by the larger size of its spores and mycelia and the greater variation in their shape and size.

The only affection with which favus of non-hairy parts is at all

likely to be confounded is ringworm of smooth parts or trichophytosis corporis (tinea circinata), and then only in the early stages, when it occasionally appears as a scaly disc which undergoes involution in the centre. Very soon, however, the characteristic yellow cups appear, which at once determines diagnosis.

Treatment.—The most effective method of treatment is complete and thorough depilation by the X-ray. This may be accomplished at a single sitting, according to the method advocated by MacKee, or by repeated exposures of comparatively short duration. The treatment should always be controlled by the use of some reliable meter with a proper recognition of the possibility of untoward results if due care is not employed. (For details of X-ray treatment *vid.* Ringworm of the scalp.)

When for any reason X-ray treatment is not or can not be employed, dependence must be placed upon the application of parasiticide lotions and ointments, preferably the latter, since they can be made to penetrate the diseased follicles more readily than the former. Before beginnng the use of these, the diseased parts should be freed of crusts; this may be best accomplished by thorough soaking with olive oil, or, better, by vaseline containing two per cent. carbolic acid, which should be liberally applied and kept on constantly for a day or two until the crusts have become so soft that they can be readily removed. When the disease is situated upon non-hairy parts, such as the trunk or extremities, frequent and prolonged warm alkaline baths will expedite their removal materially. After this preliminary cleansing, depilation should be begun when the scalp is the part affected, and continued until all the diseased hairs have been extracted. This may be performed by broad-bladed forceps or by drawing the hairs between the thumb and the back of a knife-blade.

Among useful lotions are solutions of bichloride of mercury, either in alcohol or in water, 0.5 to 1.0 per cent.; of hyposulphite of soda, 2 drachms (8.0) to the ounce (32.0) of water; of salicylic acid, 2 to 3 per cent. in alcohol. These should be mopped on thoroughly twice a day. Among the most effective ointments are sulphur, 20 to 25 per cent.; ammoniated mercury, 10 to 15 per cent.; chrysarobin, 5 to 10 per cent.; resorcin, 10 to 12 per cent. (Crocker); naphthol, 10 per cent. In using chrysarobin especial care must be taken that it does not get into the eyes. The ointments should be thoroughly rubbed in once or twice a day, and during their use the scalp should be washed every second or third day with tincture of green soap and hot water. The treatment should be continued without intermission for three or four months, when it should be suspended for two weeks in order to learn what progress toward cure has been made. If new crusts appear, as is likely, the treatment should be resumed and continued as before. When no new signs of disease appear for a period of six to eight weeks after the suspension of treatment, and more especially if the microscope shows no fungus in the hair, the disease may be regarded as cured.

On non-hairy parts the treatment is usually much less troublesome and much more rapidly effective. After removal of the crusts, the same ointments and lotions employed in favus of the scalp may be used. In addition to applications already mentioned, tincture of iodine either full strength or diluted with an equal quantity of alcohol, painted on once a day, will often prove most useful.

When the nails are affected, these should be trimmed closely and scraped as thin as possible, after which they should be immersed in a solution of mercuric bichloride, 1:500, for ten minutes at a time, twice a day; a hot saturated solution of hyposulphite of soda may be used in a similar manner. Sabouraud recommends a solution containing ¾ grain (0.05) iodine, 15 grains (1.0) iodide of potassium, in 3 ounces (100.0) of water, which is to be applied every night on lint covered with protective, such as oiled silk or a rubber finger-cot. In cases which do not yield to the usual treatment avulsion of the nail may be resorted to, followed by the usual local remedies.

Prognosis.—Although prolonged treatment is usually necessary, especially in favus of the scalp and nails, a cure may always be obtained by the use of proper remedies used with perseverance. In long-standing cases affecting the scalp, permanent loss of hair commonly occurs, often with more or less scarring, but on non-hairy parts the disease is cured with comparative ease and usually disappears without leaving any trace, although scarring may follow when there has been ulceration beneath the crusts. Favus of the nails is always extremely difficult of cure, but this, too, yields in time to properly directed treatment.

TRICHOPHYTOSIS

Synonyms.—Tinea trichophytina; Ringworm; Fr., Trichophytie.

Definition.—A disease of the skin and its appendages due to a vegetable parasite belonging to the order of moulds, the trichophyton.

According to the region attacked or the tissue invaded, trichophytosis presents four well-defined and commonly recognized clinical varieties, two affecting hairy regions, trichophytosis capitis, or ringworm of the scalp, and trichophytosis barbæ, or ringworm of the beard—one situated upon the smooth or non-hairy surfaces—trichophytosis corporis or ringworm of the body—and one attacking the nails—trichophytosis unguium.

Until a comparatively recent period all the forms of the affection were thought to be due to a single species of the organism, but the epoch-making researches of Sabouraud and others have conclusively shown that there are numerous varieties of the trichophyton, and that a few of the forms of ringworm are, strictly speaking, not trichophytoses, since they are not due to a trichophyton, but to closely related organisms.

Ringworm of the Scalp (Trichophytosis Capitis).—Synonyms.—Herpes tonsurans; Fr., Herpes tonsurant; Ger., Scheerende Flechte.

Symptoms.—Ringworm of the scalp is the commonest of all the

PLATE XXVI

Ringworm of the scalp. (Trichophytosis capitis.)

forms of trichophytic infection. Indeed, there are few schools or other institutions for children in which cannot always be found one or more examples of this affection (Plate XXVI).

It usually begins as a small round, hyperæmic, scaly spot in which at first the hairs show no evidence of disease. This spot steadily enlarges, often with considerable rapidity, until it becomes a round or oval, usually well-circumscribed patch (Fig. 133); the hyperæmia disappears, the hairs in the patch become dry, lustreless, and brittle, and break off, leaving short stumps projecting a line or more above the surface, which readily yield to traction. Usually more or less itching is present, although this is rarely severe. The number and size of the patches vary considerably. There may be but a single one, but

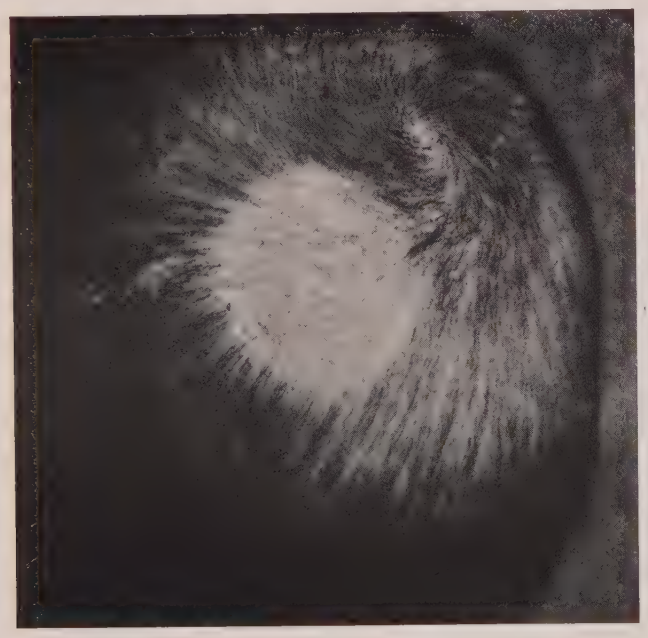


Fig. 133.—Ringworm of the scalp.

usually there are several, and in long-standing cases which have been neglected there may be many patches which as they enlarge coalesce (Fig. 134), eventually involving the greater portion of the scalp. Not infrequently the disease begins with more decided symptoms of inflammation: the small early patch may be decidedly reddened, the border surrounded by small vesicles and pustules with slight crusting, but these disappear early and the subsequent course does not differ from that already described. Or there may be numerous pin-head-sized discrete pustules situated at the mouths of the follicles, scattered about irregularly over the affected region. While this pustular eruption is often the result of the invasion of the follicles by the tricho-

phyton, it may also result from the application of too irritant parasiticide ointments or washes.

While in most cases the baldness is incomplete and the patches covered with grayish scales, occasionally there are perfectly smooth completely bald areas, the so-called bald ringworm first described by Liveing. This form, however, begins in the usual fashion with scaliness and brittleness of the hair, and only shows the smooth patches which closely resemble alopecia areata, after it has existed for a time.

In young children with very fair, fine hair, the hair loss may be insignificant, the disease consisting of ill-defined, very slightly scaly areas in which the hair is thinned and dry.

In another variety, known as disseminated ringworm, there are numerous small scaly spots scattered about over the greater portion of the scalp, each spot involving only a few follicles in which are broken hairs or stumps of hairs, which, unless the scalp is carefully gone over with a hand lens, are readily overlooked.

Fig. 134.—Ringworm, scalp. Trichophytosis capitis.

In microsporic ringworm, or that due to the *Microsporon Audouini*, the patches are round or oval, are usually limited in number, sometimes but a single one being present, and are covered with grayish scales. According to Sabouraud this variety of ringworm may be readily distinguished clinically from trichophytic ringworm by the grayish appearance of the plaques in which all the hairs are broken off a few millimetres above the surface. Each stump is surrounded by a sheath of epithelial *débris*, which, projecting from the mouths of the follicles, gives to the surface of the patch the peculiar grayish granular appearance which has been aptly likened to the skin of a plucked fowl or to cutis anserina.

Exceptionally, deep and severe inflammation of the hair follicles occurs over a circumscribed area producing a bright red, boggy, tumor-like swelling, varying in size from a small nut to an egg. The hairs speedily become loose and fall out, leaving a completely bald surface, and from the swollen mouths of the empty follicles a viscid, puriform fluid exudes. Usually more or less pain accompanies the inflammation, and in the severer forms subcutaneous abscesses may occur. This unusually inflammatory form of ringworm, which is known as kerion, may follow the usual type, or it may occur independently of any other manifestation.

Under the name lichenoid trichophytosis Guth and Herxheimer and Köster have reported a number of cases of a papular eruption associated with deep trichophytosis, in most cases of the scalp in children (kerion). The papules were for the most part follicular; the eruption bore considerable resemblance to lichen scrofulosorum and was situated on the trunk and extremities. In some cases it was of short duration, in others it lasted for several weeks. There were no subjective symptoms.

The course of ringworm of the scalp is an eminently chronic one, all the various forms lasting for months or even years. Kerion, however, occasionally terminates spontaneously, the severity of the inflammation and the complete depilation bringing about the destruction of the fungus.

Diagnosis.—Fully developed ringworm of the scalp is not readily mistaken for other affections of the same region. The rounded, more or less circumscribed, partly bald, gray, scaly patches in which are many broken hairs and stumps of hairs, the peculiar granular surface resembling the so-called "goose skin," the age of the patient, who is almost without exception a child, are features which characterize the affection sufficiently in most cases to prevent mistake. It is, however, occasionally confounded with other affections of the scalp, such as eczema, psoriasis, seborrhœa, alopecia areata, and favus. In the first two of these the symptoms of inflammation are well marked while in ringworm these are usually slight or absent altogether, except in the earliest stages. In psoriasis the scaling is thick and laminated, mica-like, totally unlike the branlike scaling of ringworm. In eczema, instead of scales, there are much more likely to be oozing and crusting at one time or another, and there is nearly always a good deal of itching. In seborrhœa the scales are fatty, usually quite abundant, and scattered over the vertex and parietal region in ill-defined instead of well-circumscribed areas; the hair is thinned, not broken off in rounded patches. In alopecia areata the baldness is complete and the scalp smooth instead of scaly; but in certain cases it is not always easy to distinguish the so-called "bald ringworm" from this affection. A careful examination of the scalp, however, will often reveal slightly scaly patches or a few stumps of hairs about the borders of the bald areas in which the microscope shows the trichophyton, which is, of course, never present in alopecia areata. Favus and ringworm of the scalp can only be mistaken for one another when the characteristic yellow crusts of the former are absent; the scarred and atrophic areas completely devoid of hair so common in favus are never seen in ringworm. The microscope is invaluable as an aid to diagnosis in this, as in all other forms of ringworm, and should never be neglected. A few stumps of hairs from the affected area are placed upon a slide with a drop of a 5 per cent. solution of potassium hydrate and covered

with a cover firmly pressed down. In a few minutes the hairs become translucent so that spores and mycelia, if present, may be readily seen with a power of 250 to 300 diameters.

Ringworm of the Beard (Trichophytosis Barbæ).—Synonyms.—Tinea sycosis; Sycosis parasitica; Barber's itch; Fr., Trichophytie sycosique; Ger., Parasitäre Bartfinne.

Symptoms.—Ringworm of the beard is much less frequent than ringworm of the scalp and non-hairy skin, but is not a very rare affection (Plate XXVII). It may begin much like ringworm of non-hairy

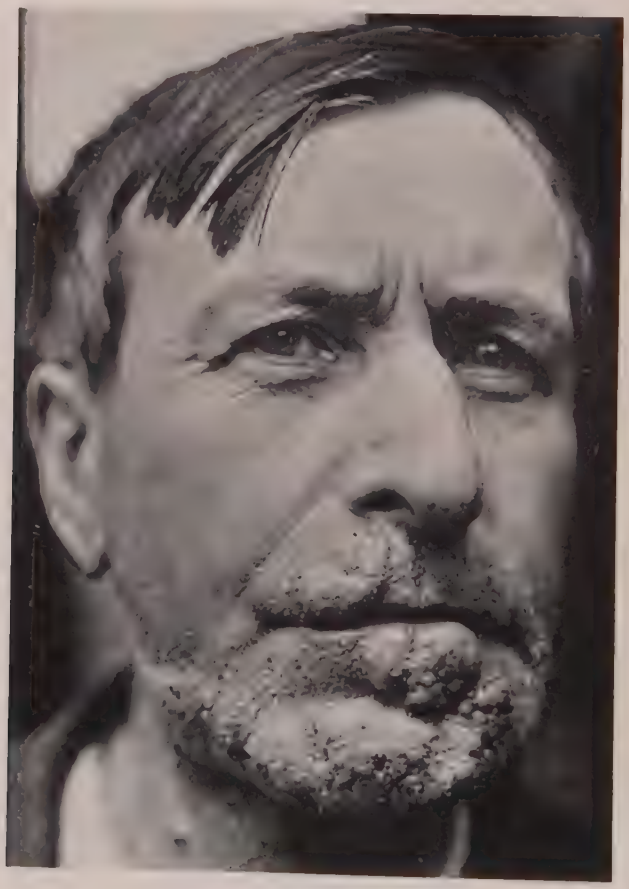


FIG. 135.—Ringworm of the beard.

parts, with small, red, scaly spots which speedily enlarge to form rounded patches or rings, about the margins of which there are occasionally minute vesicles and pustules which dry into small crusts. The hairs show but little sign of disease, but soon become loose and fall out, leaving bald areas. While it may remain of this superficial character,

PLATE XXVII

Ringworm of the beard. (Trichophytosis barbæ.)

much more commonly the fungus invades the deeper portions of the skin, producing a pustular folliculitis accompanied by more or less marked swelling resembling that seen in kerion of the scalp. Pustules, nodules, and tubercles appear, varying in size from a pea to a hazelnut, with bright red, smooth surface from which the hair has fallen, or, if the hairs still remain, they may be painlessly and easily withdrawn from the follicles (Fig. 135). In the more marked cases there may be considerable crusting owing to the drying of the puriform fluid which escapes from the inflamed follicles. Occasionally the inflammation is severe, producing marked nodular or lumpy fluctuating swellings as large as a nut, resembling abscesses. Pain, which is at times quite severe, usually accompanies these swellings. The extent of the affection varies much; there may be only a few pustules and nodules situated upon the chin or about the angle of the jaw or in the submaxillary region of one side, or the entire bearded region, with the exception of the upper lip, which usually escapes, may be invaded by the fungus. Exceptionally the disease extends to the side, and back of the hairy region of the neck, as in a case under the author's care some little time ago. When left to itself, it usually runs a course lasting for months, although it seldom exhibits the extreme chronicity shown by ringworm of the scalp.

Diagnosis.—The symptoms of ringworm of the beard are usually so characteristic that it is not readily mistaken for other diseases of this region. The malady with which it is most likely to be confounded is sycosis vulgaris, likewise a folliculitis of the bearded region. In ringworm the inflammatory symptoms are as a rule much more severe and acute than in nonparasitic sycosis; the swelling is more marked and the hairs are loose and often fall out spontaneously or may be extracted painlessly and with ease. In sycosis the hairs are firm in the follicle and efforts at extraction cause acute pain. In ringworm the upper lip is very rarely invaded, in sycosis this region is often affected. Lastly, the trichophyton may be demonstrated in the hairs in ringworm; in sycosis this organism is absent.

Ringworm of the beard may at times resemble somewhat pustular eczema of that region, but the latter is much more likely to affect the bearded region and spread beyond it, is accompanied by decided oozing and crusting with severe itching, and never presents the peculiar lumpy swellings seen in the former. The trichophyton is always present in the former, never in the latter. Ringworm is invariably accompanied by loosening of the hair, while eczema is not.

Ringworm of the beard may be mistaken for the nodular syphiloderm, but it is much more acute in its course, is inflammatory and does not produce ulceration, a symptom common in the latter. The microscope is a valuable aid in the differential diagnosis.

Ringworm of the Body (Trichophytosis Corporis).—Synonyms.—Tinea circinata; Herpes circinatus; Fr., Trichophytie.

Symptoms.—Ringworm of the smooth or non-hairy parts of the skin is a very common affection, occurring only a little less frequently than ringworm of the scalp. The symptoms which it exhibits vary considerably, according to the region affected and according to the variety of the fungus producing the infection.

The commonest clinical type ordinarily begins as one or more small, slightly red and scaly spots which enlarge peripherally, often with considerable rapidity, and as they enlarge the central portion becomes less scaly and may even become quite smooth, so that the scaly spots are soon transformed into rings varying in diameter from a dime to three or four inches and even more (Fig. 136). Less frequently this central involution does not take place, but the patches become round scaly discs varying in size from a dime to a silver half-dollar. The hyperæmia present in the beginning of the disease is usually slight and soon disappears, leaving the skin without signs of inflammation. Less frequently the redness may be quite decided and, as in ringworm of the scalp, may be accompanied by minute vesicles and pustules situated about the margins of the rings and patches; there may be even a certain amount of infiltration with crusting. The parts attacked are usually the uncovered portions of the skin, such as the face, neck, hands, and lower part of the forearms, but the trunk is by no means immune, although less frequently invaded. The number of patches present is ordinarily small, often but a single one, but there may be several, exceptionally very many (Fig. 137), in rare cases distributed over the greater portion of the trunk. Occasionally as the rings enlarge new ones form within the old ones, so that there may be two or more concentric rings (Fig. 138). Moderate itching is usually present in the early stages, but is rarely a prominent symptom.

Fig. 136.—Ringworm. Trichophytosis corporis.

In addition to the foregoing ordinary type there are a number of others which are characterized by a considerable degree of inflammation (Plate XXVIII).

In ringworm of the thighs, tinea cruris, formerly known as eczema marginatum, semicircular, bright-red, sharply marginate patches occur on the inner surface of one or both thighs and the scrotum, which spread

Ringworm of the thighs. (Trichophytosis cruris.)

Eczematoid ringworm of the toes.

peripherally, sometimes undergoing central involution, but often remaining as solid patches, with scaly borders. These patches are often decidedly inflamed, presenting eczematoid symptoms, such as oozing and crusting, accompanied by severe itching; indeed, it was formerly supposed to be a special form of eczema, hence the name eczema marginatum given to it by Hebra, who first described it. In ordinary cases the eruption is limited to the thighs, the patches rarely exceeding the size of the palm, but in long-standing or neglected cases it may extend downwards to the knees, backwards over the perineum, and up between the buttocks, and anteriorly up over the pubis and abdomen as far as the umbilicus and even higher, as in a case very recently

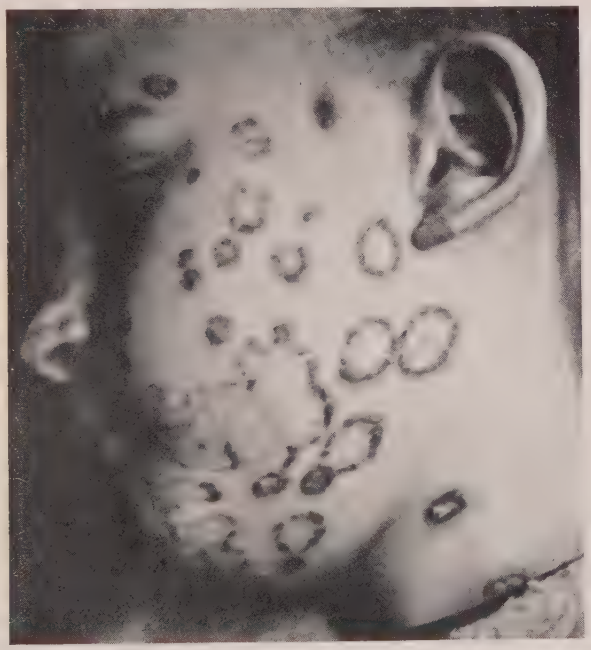


FIG. 137.—Ringworm. Infection from cat. All the members of the family (five) affected.

under the author's observation (Fig. 139). The axillæ are almost as frequently attacked in the same manner; here the disease assumes the shape of variously sized, round or oval, bright-red patches with sharply circumscribed borders attended by decided itching and burning (Fig. 140). Unlike the other forms of ringworm, this variety, when occurring in hairy regions such as the pubis, does not attack the hairs. This form of ringworm is known in the Orient as *Dhobie itch,* a name given to it because of its supposed transmission through the laundry.

In another variety, occurring upon the hands and feet, in the latter region between and on the under surface of the toes, the resemblance

to eczema is still more marked, justifying the name eczematoid ringworm recently applied to it. Upon the hands it may resemble a mild erythemato-squamous eczema of the palm with a moderate amount of redness and some scaling, which often extends to the sides of the fingers, and occasionally over the dorsal surface. Or less frequently it begins very acutely with redness, swelling, and an abundant eruption of vesicles and pustules, the clinical symptoms resembling those

Fig. 138.—Ringworm of the body. Trichophytosis corporis. Concentric rings.

of acute eczema to such a degree that it may be quite indistinguishable from that affection without the aid of the microscope. In this form of the disease the usual marginate character of the diseased area is absent. Upon the toes it resembles an intertriginous eczema, for which it is usually mistaken (Plate XXVIII). The skin between the toes is red and desquamating: less frequently it is moist, and there is more or less itching. The disease often spreads backwards upon the sole, the advancing border being rounded, or serpiginous and quite sharp. The course of this eczematoid eczema of the hands and feet is usually very chronic, many cases lasting for months and even years. This variety of ringworm, the knowledge of which we owe chiefly to Sabou-

Deep ringworm (Trichophytosis profunda) (animal origin).

Deep ringworm (Trichophytosis profunda) of the neck with ringworm of the beard (Trichophytosis barbæ). Probably animal origin.

raud and Whitfield, is in all probability much more frequent than has hitherto been supposed; indeed, Sabouraud asserts that eight out of every ten cases of so-called intertrigo of the toes are in fact examples of ringworm.

In still another form, confined to the palms and soles, usually more commonly the latter, first described by Djelaleddin Mouktar, in 1892, there is at first an eruption of deep-seated vesicles and pustules, presenting a more or less circular arrangement, which after a time is followed by desquamation, and later by marked hyperkeratosis.

In a certain small proportion of cases the fungus penetrates deeply

Fig. 139.—Tinea cruris (ringworm of the thigh).

into the follicles, giving rise to severe folliculitis (Plate XXIX). In this deep variety of trichophytosis (trichophytosis profunda) there are rounded or irregular patches of follicular pustules seated upon a swollen and inflamed base, varying in size from a silver coin to the palm of the hand; exceptionally quite extensive areas may be involved, as in a case under the author's observation years ago in which the lower two-thirds of the outer side of one leg was occupied by an extensive plaque of inflamed and swollen follicles. After reaching a certain size the patches are apt to remain stationary; they rarely show the rapid peripheral extension which often occurs in the more superficial forms. In the severest form abscesses and even ulceration may occur (Fig. 141). This trichophytic folliculitis was first described by Leloir, under the title perifolliculitis suppurativa conglom-

crata, but he was entirely unaware of its parasitic nature. It is especially apt to occur in dairymen, liverymen, hostlers, and others whose occupation brings them into frequent and more or less close contact with horses and cows, and is most frequently situated upon the uncovered parts, as the backs of the hands and the wrists. In rare instances the mucous membranes adjoining the skin, such as the tongue, the buccal mucous membrane, the conjunctiva, may be invaded

FIG. 140.—Ringworm of the axilla.

by the trichophyton. Kille, Stern, and Eichhoff having reported examples of such invasion.

Etiology.—All the forms of ringworm are caused by the invasion of the skin and its appendages by a vegetable parasite, either some one of the varieties of the trichophyton, or by a closely related organism, the Microsporon Audouini, which was until recently also regarded as a trichophyton. All the varieties of the malady are more or less contagious, infection occurring through immediate contact or, what

is much more frequent, through the intervention of various articles of clothing, such as hats, underwear, or articles of the toilet, such as towels, combs, brushes, etc., which serve as carriers of the infecting organism. The disease is quite frequently contracted from some one of the lower animals, such as the horse, the cow, cats, and dogs, this origin being especially common in those varieties exhibiting unusually inflammatory symptoms, or accompanied by suppuration with invasion of the deeper tissues, as in kerion and other forms of deep trichophytosis. Although there can be no ringworm without the fungus, infection is favored by certain favoring elements. Ringworm of the scalp is practically never seen in adults, its occurrence in those past the age of fifteen is so infrequent as to be a clinical curiosity. Ringworm of the smooth or non-hairy surfaces may occur at any age, but

FIG. 141.—Deep ringworm.—Trichophytosis profunda. Infection traced to kitten.

is much less common in adults than in children; the so-called eczema marginatum or ringworm of the thighs, however, is a disease of adult life. Sex as sex has apparently but little influence; the more violent inflammatory forms are, however, seen more frequently in males than in females, because the former are much more likely to come in contact with the lower animals from which these forms are contracted. Occupation, as affording special opportunity for infection, exerts some influence in its production; dairymen, hostlers, and all others whose employment brings them into contact with the lower animals are particularly liable to the deep forms, in whom, indeed, they are seen chiefly. School children and the inmates of orphan asylums or other institutions in which large numbers of children are collected are especially the subjects of it. Sabouraud has found that inoculation with the parasite succeeds much more readily in those with alkaline sweat, acidity of this fluid apparently diminishing susceptibility.

In ringworm of the scalp about 90 per cent. of the cases are due to a small spored fungus, the *Microsporon Audouini* (Figs. 142 and 143), the remaining 10 per cent. are trichophytic, *i.e.*, due to some one of the varieties of the trichophyton, the *trichophyton endothrix*, or, in the case of the inflammatory varieties, the *endoectothrix*.

In ringworm of the non-hairy surfaces the Microsporon Audouini or some one of its varieties derived from the lower animals, the dog or the horse, is present, or more frequently a large spored fungus, usually the ectothrix, or less frequently an endothrix. In deep-seated trichophytosis such as kerion of the scalp, ringworm of the beard, and the agminate folliculitis, a large spored trichophyton of the

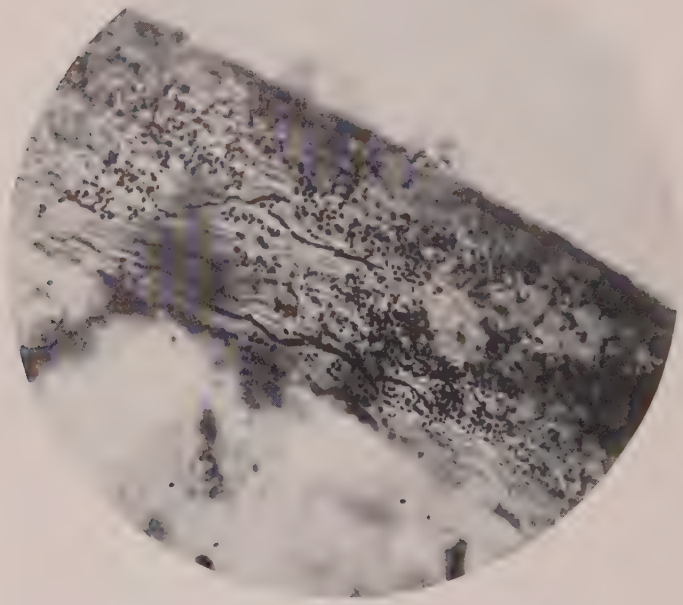


FIG. 142.—Ringworm of the scalp. Hair containing spores and mycelia of the Microsporon Audouini Stained.

ectothrix variety, is present. In ringworm of the thighs and axillæ the active cause is the *Epidermophyton inguinale*, a subvariety of the trichophyton which, unlike the other varieties, does not invade the hair.

The statement made by some authors that fair-haired subjects are more susceptible than dark-haired ones is not confirmed by the author's experience, he being quite sure that he has seen just as many if not more cases in those with dark complexions; nor has he found that the patient's general condition influences in any way his susceptibility to the malady, nor its course when once contracted.

Pathology and Pathological Histology.—Ringworm in all its forms is a dermatomycosis, *i.e.*, a disease resulting from the invasion of the

skin and its appendages by a fungus. Gruby, between 1841 and 1845, made to the French Academy of Sciences three communications in which he announced the discovery of a cryptogam first, in the hairs of ringworm of the beard, later in the hairs of ringworm of the scalp, which he regarded as the cause of these diseases. Although Gruby's discoveries were eventually confirmed by other observers and the parasitic nature of ringworm fully established, his division of the parasites into three distinct varieties was entirely overlooked, and for a half century

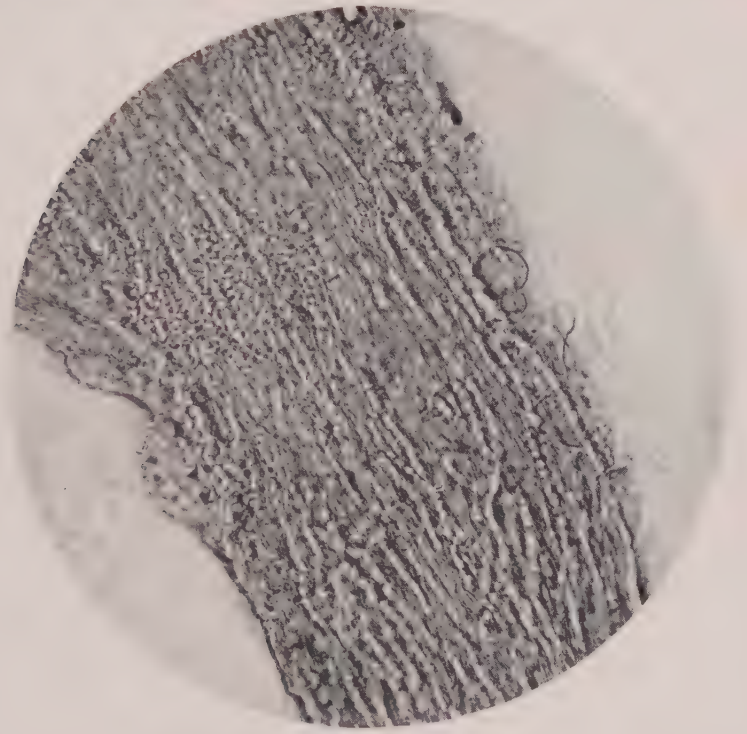


FIG. 143.—Ringworm of the scalp. Spores and mycelia in hair. Unstained.

there was supposed to be but a single organism concerned in the production of ringworm, the trichophyton. But the epoch-making researches of Sabauraud, begun in 1892, fully confirmed the statements of Gruby as to the plurality of the fungi.

Two species of parasitic cryptogam are found in ringworm, the microsporon, an organism with small spores, and a large-spored organism, the trichophyton. Of the former there are several varieties,[1] the most important of which is the *Microsporon Audouini,* found, as has already been mentioned, in about 90 per cent. of all cases of ringworm of the scalp, to which region it is practically limited. In addition there

[1] It is still a matter for debate as to whether all these variations represent real varieties or are only variations due to differences in conditions of growth.

are two forms of animal origin which are likewise pathogenic in man, the *M. lanosum,* found in the dog, and the *M. equinum,* found in the horse; the former gives rise to a ringworm of the scalp and of the smooth surfaces; the latter has been observed on the non-hairy parts only in a few instances.

In the scales taken from a patch of ringworm of the scalp due to the *M. Audouini,* the fungus exists as a network of slender curved and undulatory mycelial tubes varying in size from 1 to 3 microns in diameter, with lateral projections and transverse septa at intervals which are best seen in stained specimens. Hairs from such a patch are surrounded by a sheath of small spores 2 to 3 microns in diameter, which extends a short distance above the intrafollicular portion of the shaft and downwards to the neck of the bulb, the spores showing no definite arrangement. No spores are found in the substance of the hair itself, but delicate mycelia, which run in a longitudinal direction, are present within the hair shaft, which extend as a delicate fringe below the lower end of the sheath of spores about the neck of the bulb, the fringe of Adamson. Cultures of the organism upon proof medium (*milieu d'epreuve*) begin as a small white downy disk with a small elevation at the point of inoculation; later as the disk grows larger it becomes grayish-white and is divided into sectors by 3 or 4 furrows radiating from the centre. The appearance of the cultures varies somewhat according to the medium upon which they are grown. Cultures of M. lanosum are more rapid in their growth and more downy than those of M. Audouini, but later exhibit a central smooth area around which a characteristic elevated white woolly ring forms which serves to identify it.

Two species of the large spored fungus or trichophyton are concerned in the production of ringworm, viz., *T. endothrix,* in which the spores are found within the structure of the hair shaft; and the *T. ectothrix,* in which they are outside of it, although recent investigations would seem to show that under certain circumstances this variety may also penetrate the shaft, and for this reason it is also designated *T. ectoendothrix.* Both these varieties are again divided into a number of subvarieties, the division being based chiefly upon cultural peculiarities. Of the *Trichophyton endothrix* there are three principal subvarieties, which are named after certain cultural characteristics—*T. acuminatum, T. crateriforme,* and *T. violaceum.* The endothrix varieties of the trichophyton are found in ringworm of the scalp and of the smooth surfaces, and are rarely attended by any considerable degree of inflammation. In the epidermic scales the fungus exists as mycelial filaments composed of numerous short rectangular joints or spores. In the hair the *T. crateriforme* occurs as long ribbons or chains made up of square elements within the hair shaft parallel with its long axis, while the *T. acuminatum* shows mycelia or long chains of round spores resembling a string of beads, also within the hair. The *T. violaceum* gives rise to lesions upon the smooth skin, in the

beard and the scalp which are occasionally more or less inflammatory and may attack the nails. In the epidermis it occurs as slender mycelia with few divisions; in the hair the spores do not occur as chains or ribbons, but without any definite arrangement. This variety is in the beginning both an ecto- and an endo-thrix, but when fully established it is strictly limited to the interior of the hair, a pure endothrix.

Two varieties of trichophyton, the *T. cerebriforme* and *T. plicatile*, neither of them of frequent occurrence, and the latter rare, have been placed in a group by themselves under the name T. *neo-endothrix*, since they present the features of both an endothrix and an ectothrix, some of the hairs showing the fungus within their shafts, while in others it remains outside. The *T. cerebriforme* attacks the scalp, the smooth surfaces, and more especially the beard. The cultures of this organism upon proof media are characterized by a wrinkled surface, which becomes more and more marked as they grow.

The *T. ectothrix*, of which there are two principal varieties and a number of subvarieties, remains outside the hair, about which it forms a sheath. All the varieties of this parasite are of animal origin and are found in the inflammatory and suppurative forms of ringworm. There are two principal groups of this trichophyton, viz., one which has small spores 3 to 4 microns in diameter, approaching in size those of the microsporon, and a second in which the spores are large, 8 to 9 microns in diameter. The most important of the small-spored ectothrix trichophytons, although none of them are of frequent occurrence, is the *T. asteroides*, which is found in some ringworms of the scalp presenting the symptoms of kerion and certain pustular forms upon the smooth surfaces. The cultures of this variety are of rapid growth, have in the beginning a central eminence, which later becomes umbilicated, surrounded by a star-like border, the surface covered with a white powder.

The most important of the large-spored trichophytons are the *T. rosaceum*, with rose-colored cultures, which produces an eruption in the beard resembling somewhat keratosis pilaris; the *T. equinum*, which occurs on the smooth surfaces and in the beard, producing suppurative lesions in the latter region; and the *T. ochraceum*, with favus-like cultures, found in those who come in contact with cattle, producing pustular lesions.

The manner in which the fungus penetrates the hair has been the subject of considerable discussion; needlessly so, as it seems to the author. The older investigators thought the fungus reached the hair shaft by growing downwards until it reached the softer cells of the bulb, where it entered. Others, like Leslie Roberts and MacFayden, found that the fungus produced a keratolytic substance which, eroding the outer surface of the shaft, permitted it to enter the substance of the hair. But it hardly seems necessary to invoke any process beyond a purely mechanical one, by which the elements of the parasite insinuat-

ing themselves beneath the free border of the cells of the cuticle are enabled to penetrate the hair.

In all the varieties of ringworm the horny cells of the epidermis are first invaded, the hairs being attacked later when the mouths of the follicles are reached.

The *Epidermophyton inguinale,* the parasite present in ringworm of the thighs and axillæ (Fig. 144), the so-called eczema marginatum, and in certain inflammatory ringworms of the hands and feet, although morphologically and culturally closely akin to the trichophytons, presents some characteristic features which separate it from these fungi. It is confined to the epidermis, where it occurs as mycelial threads (Fig. 145) with rectangular double-contoured joints having a transverse diameter of 4 to 5 microns and somewhat variable length. Even in hairy regions, such as the pubis and the axilla, the hairs remain free, a fact noted by Hebra. Cultures are of slow growth, have a downy surface, with a slightly eccentric, hood-like elevation, are divided by a number of radiating furrows, and are of a characteristic greenish-yellow color.

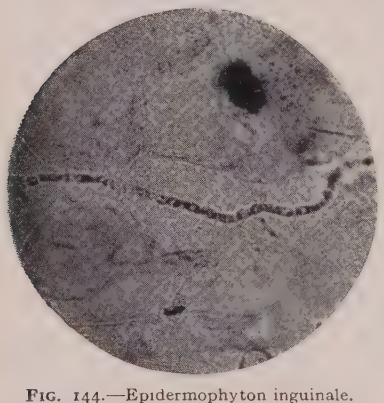


Fig. 144.—Epidermophyton inguinale. From tinea cruris, ringworm of the thighs.

Pathological Anatomy. — In the scalp and beard, as the result of their invasion by the fungus, the nutrition of the hairs is soon interfered with; they become bent and twisted, are split longitudinally by the growth of the mycelium and spores between their fibres, and in consequence, break off readily, leaving stumps with brush-like ends projecting a short distance above the surface of the scalp; eventually they are loosened from the hair papilla and fall out spontaneously while those remaining may be readily extracted (Fig. 146).

In the superficial forms of ringworm such as occur upon the scalp and smooth surfaces, the tissue changes are usually trivial; there is a moderate hyperæmia with a very slight exudation of cells in the papillæ of the corium and between the cells of the epidermis, and a moderate degree of parakeratosis producing more or less desquamation. Not uncommonly there is a moderate intercellular œdema in the rete with the formation of vesicles and crusts; these changes are present only in the early stages, and as a rule soon disappear.

In the deep form of ringworm, trichophytosis profunda, the changes are much more decided and extensive. In kerion and agminate folliculitis there are all the features of a folliculitis and perifolliculitis with suppuration of the follicles and the formation of miliary abscesses in the epidermis; occasionally the follicle is completely destroyed. Spores and mycelia, the latter principally, are present within the fol-

licule, and within and around its walls are numerous polymorphonuclear leucocytes and lymphocytes. Majocchi has described intradermic lesions presenting the histological features of a granuloma, due

FIG. 145.—Tinea cruris, ringworm of the thighs. Fungus, Epidermophyton inguinale, in the horny layer of the epidermis.

to the invasion of the corium by the trichophyton. Sabouraud believes the granuloma of Majocchi occurs about fragments of hair which have accidentally penetrated the derma; he does not believe that the

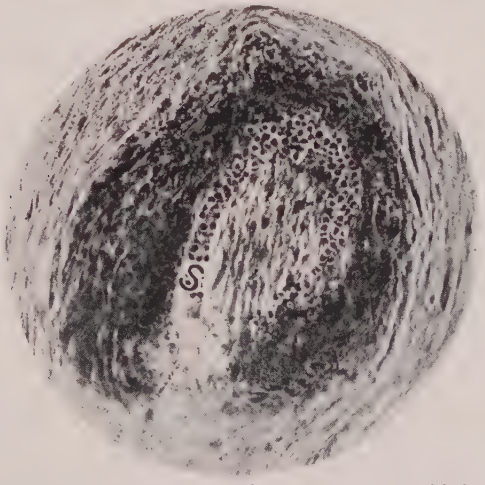


FIG. 146.—Trichophytosis. Ring of spores around hair.

trichophyton ever actively invades the corium. The author is quite convinced, however, from his own observations, that, quite exceptionally it is true, the fungus may break through the walls of the follicle

and invade the derma; he has seen one undoubted instance of this (Figs. 147 and 148).

Plato found that by employing a filtrate of cultures made from the organism present in the deep form of trichophytosis (which he calls "trichophytin") he could produce a general and local reaction in those suffering from deep trichophytosis, and that an unmistakable therapeutic effect followed the reaction; these results were confirmed later by Truffi. Bruhns and Alexander, following the observation of Jadassohn that peasants who once had bovine trichophytosis seemed to have acquired immunity for that affection, found that a partial immunity followed inoculation with cultures of certain of the trichophytons.

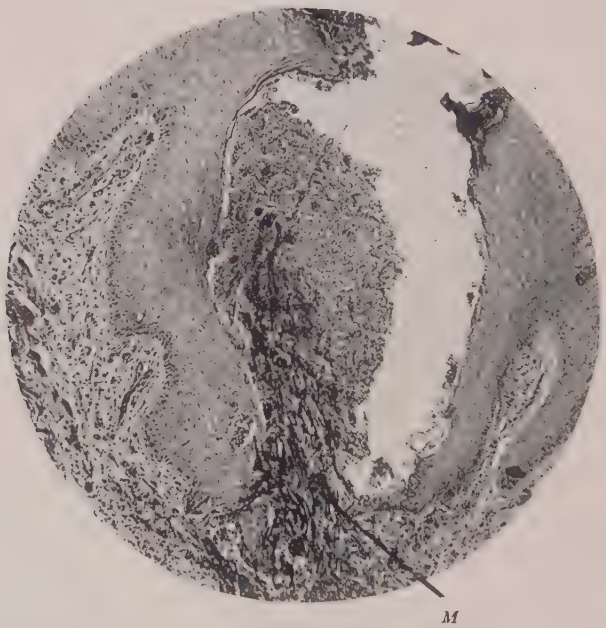


FIG. 147.—Deep trichophytosis. (Trichophytosis profunda.) Hair follicle filled with cellular débris and mycelia, *M*, the latter breaking through the bottom of the follicle.

It would seem, therefore, that this organism, like other pathogenic organisms, produces immunizing substances.

Treatment.—RINGWORM OF THE SCALP.—The utilization of the extraordinary depilatory properties of the Röntgen rays by Sabouraud in the treatment of ringworm of the scalp marked a very great advance in the therapeutics of this usually obstinate and troublesome malady. The comparative rapidity, ease, and certainty with which a cure may be obtained by the proper use of this agent make it the remedy of choice, especially in institutions where large numbers of children are to be treated; but it must be said at once that it is not a remedy to be used by the inexperienced nor the careless, since in such hands it is capable of producing disastrous results. The essential feature of X-ray treatment is the exposure of the diseased area, at a single sitting, to the

action of the ray for a length of time just sufficient to produce complete temporary loss of hair without the production of a dermatitis, the average duration of a sitting being about fifteen minutes. The duration of the sittings should be controlled by a suitable measuring device, such as the radiometer of Holzknecht or the pastiles of platino-barium cyanide devised by Sabouraud and Noire. The hair should be cut short and the sound portions of the scalp protected by diaphragms of sheet-lead with openings for the areas to be rayed, or, what is much more convenient, the X-ray tube is enclosed in a hood composed of some material impervious to the rays, provided with an opening through which the rays are directed, the size of which may be varied

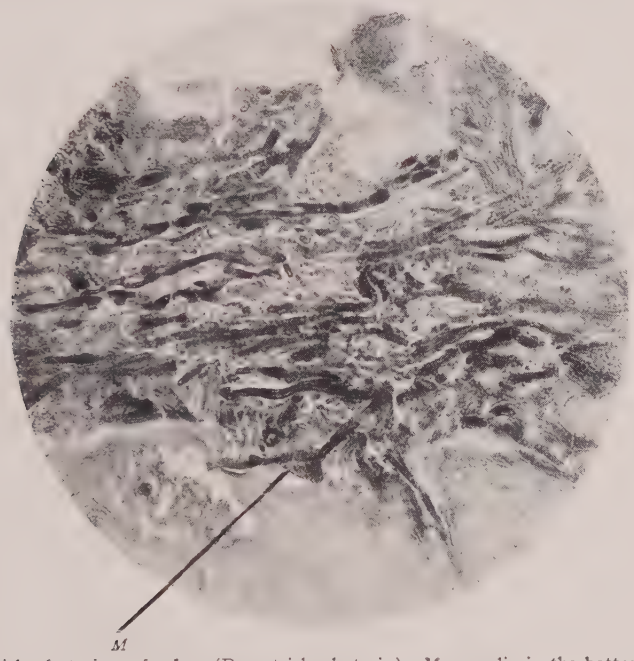


FIG. 148.—Trichophytosis profunda. (Deep trichophytosis.) *M*, mycelia in the bottom of the hair follicle. Same section as Fig. 147.

according to the size of the patch to be treated. In the method used by Sabouraud the scalp is placed 15 cm. from the anode of the tube (or centre) and kept at this distance during the séance, and a pastile of platino-barium cyanide contained in a special holder is placed midway between the scalp and the anode. When the pastile has lost its greenish-yellow color and has become a color corresponding to the standard tint " B " of Sabouraud or to 4 or 5 " H " of the scale of the Holzknecht meter, the sitting should be ended. When there are a number of patches, care must be taken that the irradiated areas do not overlap, which is best prevented by covering the patches already treated with disks of sheet-lead which may be conveniently held in place by rubber bands.

Fifteen to twenty days after a properly made exposure the hair begins to fall, and depilation is complete in about ten days. When the hair begins to fall the scalp should be washed daily with tar, salicylic acid or sulphur soap and warm water, and afterwards anointed with an ointment containing one-half drachm (2.0) of ammoniated mercury to the ounce (32.0), or one-half drachm (2.0) precipitated sulphur to the ounce (32.0). The hair begins to grow again after about two months, and is completely restored at the end of four. When there are small patches scattered over the greater part of the scalp it may be best to depilate the entire scalp; when this is to be done, the method devised by Kienboeck as modified by Adamson, may be employed by which this may be accomplished in five sittings. Five points are selected—one anteriorly, 3 to 4 cm. within the border of the hair over the centre of the forehead; a second posteriorly, 3 to 4 cm. above the centre of the lower border of the occipital region; a third midway between these two on the vertex, and one on each side of the head 3 to 4 cm. above the ears. By directing the rays upon each one of these points in succession, giving each one a depilatory dose, all portions of the scalp will be equally exposed. As the rays fall obliquely and therefore with diminished intensity upon the overlapping parts, owing to the curved surface, the actual amount of rays received by these is no more than equal to that received by the portions of the scalp upon which the rays fall directly.

If for any reason the X-ray treatment cannot be employed, recourse must be had to the older method of treatment which consists essentially in the application of parasiticides in the shape of ointments or lotions, preferably the former, to the diseased areas, for the purpose of destroying the fungus or inhibiting its growth.

The hair should be cut short before beginning the treatment, since this greatly facilitates the application of the lotions or ointments selected, and, what is of great importance, it enables the physician to see small patches which would escape notice if the hair were long. While it is desirable for the reasons given to have the hair short, it should not be shaved, since if this is done the diseased and healthy areas can no longer be readily distinguished from one another. Depilation is without doubt a valuable auxiliary in the treatment, since it not only gets rid of a considerable quantity of fungus, but by emptying the follicles it enables the local applications to penetrate more readily and more deeply into them. This is most conveniently performed with a broad-bladed pair of forceps; and each séance should be followed by the application of the parasiticide lotion or unguent selected. The scalp should be washed every three or four days, employing a sulphur-salicylic acid soap, or a tar soap of good quality, and hot water. Daily washings as advocated by some authors are not necessary, and moreover remove the parasiticide ointment or lotion, which in order to produce the best effect should be continuously in contact with the diseased areas.

To prevent the spread of contagion, especially in schools and other institutions for children, the patient should wear constantly a close-fitting cap made of some material such as oiled silk, and, when possible to prevent it, should not come in contact with other children.

Ointments are usually more effective than washes for the reason that they can be more effectively applied and can be made to more readily penetrate the hair-follicles where the fungus is seated. Solutions of parasiticides in alcohol, ether, or chloroform penetrate the follicles much more readily than watery ones and should always be preferred to the latter.

The number of parasiticide substances which may be employed is considerable. Sulphur, the various salts of mercury, such as the bichloride, the biniodide, nitrate, ammoniated mercury, oleate, iodine, betanaphthol formalin, picric acid, chrysarobin, oleate of copper, are some of the drugs which may be employed with more or less good effect. Success depends not so much upon the selection of any one of these, as upon the intelligence and perseverance with which the treatment is carried out.

Iodine is usually employed in alcoholic solution. Either the ordinary tincture of full strength or somewhat diluted is painted upon the patches once or twice daily. Dissolved in oil of tar or oil of cade (two drachms to the ounce, 8.0 to 32.0) it forms an application long in use in England known as Coster's paste; this is thoroughly rubbed in with a stiff brush daily, removing the blackish crust which forms after a few days, before making further applications. Jackson recommends an ointment containing one drachm in an ounce (4.0 to 32.0) of goose grease which penetrates more readily than other fats, applying it twice a day. In the author's experience this remedy has proven more effective than any other.

Sulphur is an old and effective remedy and is best applied as an ointment, 10 to 20 per cent., thoroughly rubbed in twice a day.

Betanaphthol in an ointment containing 10 to 12 per cent. is a most useful remedy and one which rarely produces any undue amount of inflammatory reaction, even after prolonged use; it should be thoroughly rubbed in once a day.

Of the mercurial preparations the bichloride of mercury is the most efficient. This is best employed in alcoholic solution, 2 : 1000 to 5 : 1000, painted on with a brush. Considerable irritation usually follows the applications of the stronger solutions after a time; if this occurs, they should be suspended, and some mild ointment applied until the inflammation subsides. It should be kept in mind that the use of such solutions is not entirely devoid of danger from absorption. Ammoniated mercury as a 5 to 10 per cent. ointment is likewise a useful application, especially in the cases attended by pustular lesions. The oleate of mercury in full strength (20 per cent.) or diluted is another useful mercurial preparation, but is apt to produce considerable irritation after a time; it should be well rubbed in, as other ointments.

Chrysarobin is an efficient parasiticide and may be used either as an ointment containing 3 to 10 per cent., or it may be applied in saturated solution in chloroform repeatedly painted on until a film of chrysarobin powder covers the patch, which is then to be painted over with collodion, as recommended by Stelwagon. In using this remedy care must be taken that a severe dermatitis is not produced, and especially that it does not get into the patient's eyes.

Picric acid in a 50 per cent. solution of camphor in alcohol, as recommended by Williams, painted on the patches with a brush twice a day, is an effective remedy; the formula advised by Williams is as follows:

℞

Camphor,
Spt. vin. rect. .....āā ℥iv (120.0)
Acid picric ..... gr. vij (0.50)

The chief, indeed the only, objection I have found to this application is the intense yellow stain which it imparts to everything it touches. Formaline, a 40 per cent. solution of formaldehyde, is another effective parasiticide which has been recommended in the treatment of ringworm of the scalp. This should not be employed in full strength, but should be diluted with water, 1:10, or, better, glycerin, 1:5, as less irritating, and thoroughly brushed with a stiff brush. The great irritation which usually follows this remedy limits its usefulness very much, and it should not be used over large areas, but on small circumscribed patches. Not uncommonly a combination of two or more parasiticides seems to be more effective than either one alone; thus, the addition of salicylic acid to ointments of sulphur, of betanaphthol, or chrysarobin materially enhances their effects; combinations of mercury and iodine, or tar and sulphur, at times do better than either one alone. Stelwagon finds a solution of mercuric biniodide, one to three grains (0.65-0.20) to the ounce (32.0) of tincture of iodine, one of the best applications in young children or in recent cases, painting it on two or three times daily. One or two drachms (4.0 or 8.0) of sulphur in the ounce (32.0) of the officinal tar ointment is often a most useful, although dirty, application. In obstinate cases applications of croton oil which produce a folliculitis resembling that which occurs at times spontaneously may be applied, either pure or diluted every day or two until a pustular folliculitis is produced. When this appears, the oil must be suspended and a poultice applied. Hairs loosened by the folliculitis should be extracted. This method is painful and should not be employed in the case of young children; the oil should be applied by the physician himself in order to avoid accidents. There is danger that areas of scarring with consequent permanent baldness may result if the inflammation becomes too severe.

In the treatment of the more inflammatory forms, and in the deep-seated variety with swelling known as kerion, the milder parasiticide applications, such as a solution of sodium hyposulphite one drachm (4.0) to the ounce (32.0) of water, or comparatively weak ointments

of sulphur or ammoniated mercury should be employed at first; and as the inflammation subsides the stronger ointments or lotions may be resorted to as in the ordinary types. In very inflammatory cases the continuous application of a saturated solution of boric acid applied on lint covered with oiled silk may be used for a few days before trying more active remedies.

Ringworm of The Beard.—In the treatment of ringworm of the beard the same local remedies are to be employed as in ringworm of the scalp, but somewhat weaker. If crusts are present, these should be removed by the application of olive oil or vaseline containing 2 to 3 per cent. carbolic acid, followed by washing with soap and hot water; or if there is much swelling and tenderness, a starch poultice made up with a saturated solution of boric acid instead of plain water may be applied for twelve to twenty-four hours. In this variety of the malady depilation is even more useful than in ringworm of the scalp, and, owing to the thickness and stiffness of the hairs and their looseness, is more readily performed than in the latter region. In addition to the extraction of all loose hairs, the beard should be shaved daily or every other day, or at least kept as short as possible by clipping with scissors. Parasiticide lotions or ointments may be used. A solution of sodium hyposulphite, one drachm (4.0) to the ounce (32.0) of water may be mopped on three or four times a day; or a solution of mercuric bichloride, 1 :1000 or 1 :2000, the strength depending upon the sensitiveness of the skin and the severity of the inflammation, may be applied in the same manner. Sulphur ointment, one drachm (4.0) to the ounce (32.0) of cold cream or of equal parts of lanoline and vaseline, is a very effective application; this should be gently rubbed in once or twice a day. An ointment of ammoniated mercury, 45 to 60 grains (3.0 to 4.0) to the ounce (32.0) of ointment base, is another useful remedy. An effective method of treatment is to use both a lotion and an ointment, the former to be applied during the day two or three times, the latter at night upon retiring; thus, a lotion of hyposulphite of soda may be softly mopped on several times a day, and an ointment of sulphur such as has been mentioned above, thoroughly rubbed in at bedtime. Or a lotion of bichloride of mercury, 1 :2000, may be applied to the entire region, except the upper lip, two or three times a day with a mop of absorbent cotton, and an ointment of ammoniated mercury, one drachm (4.0) to the ounce (32.0), applied at night with gentle friction.

Ringworm of Non-Hairy Parts.—The treatment of ringworm of non-hairy parts, the so-called smooth surfaces, is a much less complicated matter than that of the scalp and beard. With the exceptions already noticed, the disease is much more superficial than in the latter regions and the amount of inflammation often trivial, the application of the parasiticides much easier, and their effect upon the fungus much more prompt. The hyposulphite of soda solution with a few minims of glycerin to the ounce (32.0) already mentioned, or tincture of iodine, painted upon the patch once a day, will usually suffice to bring about the disappearance of the

disease within a comparatively short time. The bichloride of mercury solution, 1 : 1000, in water is a cleanly and effective application. Among ointments, one containing a drachm (4.0) of precipitated sulphur to the ounce (32.0), well rubbed in twice a day, is usually effective; an ammoniated mercury ointment, 45 to 60 grains (3.0 to 4.0) to the ounce (32.0), is equally efficacious.

In ringworm of the thighs and axilla, the so-called eczema marginatum, the solutions or ointments must frequently be considerably diluted owing to the amount of inflammation present and the consequent irritability of the skin. In this form of the malady the solution of hyposulphite of soda is especially useful, but it should not be used stronger than one drachm (4.0) to the fluid ounce (32.0), and even in this strength it will sometimes irritate so that its use must be suspended for a day or two. As a rule, washes do better than ointments in this variety of ringworm since the latter, unless made up with mineral fats, speedily become rancid and add to the irritation. If the inflammation is not too great, the patches may be lightly painted with diluted tincture of iodine once a day. The author has recently employed a 2-per-cent. solution of salicylic acid in 70 per cent. alcohol with great satisfaction; it cures promptly, is cleanly and without odor, and seldom irritates.

In the deep forms of ringworm occurring upon the hands and arms, arising from the lower animals, the same precautions as to the strength of the applications should be observed as in the other unusually inflammatory forms.

In the eczematoid ringworm of the hands and feet, one of the most efficacious applications is the ointment of salicylic acid (3 per cent.) and benzoic acid (5 per cent.) recommended by Whitfield, but it must be used with some degree of care, since it frequently produces so much dermatitis that it must be suspended for a time.

In ringworm of the nails, as much of the diseased nails should be trimmed away as possible and the remainder scraped quite thin. They should then be immersed daily in a hot solution of bichloride of mercury, 1 : 2000, for twenty minutes, and afterwards wrapped up in an ointment of ammoniated mercury, one drachm to the ounce (4.0 to 32.0). Prolonged immersion in a saturated solution of sodium hyposulphite, followed by the application of a sulphur ointment, one drachm to the ounce (4.0 to 32.0), spread upon lint, may also be employed. In cases which resist less heroic measures, avulsion of the nails may be performed under an anæsthetic, followed by daily applications of tincture of iodine (10 per cent.). Sabouraud recommends dressing the diseased nails with the following solution: Iodine, .05; iodide of potassium, 1.0; distilled water, 100.0, every night, covering it with protective.

TINEA IMBRICATA

Synonyms.—Tokelau ringworm; Bowditch Island ringworm; Gune; Herpes desquamans; Cascadöe.

Definition.—Tinea imbricata is a parasitic disease of the tropics

characterized by patches of imbricated, papery scales arranged in concentric rings.

Symptoms.—The disease begins as small slightly elevated round or oval brown patches, in the centre of which the epidermis splits and loosens as the patches enlarge, forming rings of tissue-paper-like scales. When these rings have reached about one-half inch in diameter, a new small brown patch appears in the centre, which undergoes the same evolution as the first one, and this is repeated a number of times until the patches contain as many as seven or eight concentric rings. According to Königer and Tribondeau, the eruption begins as rings of papules or papules and vesicles, accompanied by severe itching, followed by desquamation. The disease extends with considerable rapidity, the patches growing in diameter from one-quarter to one-half inch a week; and as they enlarge adjacent patches frequently intersect, forming gyrate and serpiginous patches of considerable extent, covering, in long-standing cases, the greater part of the trunk and extremities. The scales are quite large and thin, with the free edge toward the centre of the patch slightly curled up, while adherent on the outer edge, producing an appearance somewhat like the arrangement of tiles on a roof (Fig. 149). Occasionally the ringed arrangement disappears after a time, or may be absent from the beginning, the disease then appearing as a diffuse, widespread, abundant desquamation. In old cases the scales, instead of being thin and paperlike, are thick and horny, causing the skin to appear as if coated with clay, hence one of the native names for the malady meaning clay-covered. When the scales are removed the skin beneath is seen to be covered with numerous dark concentric rings and serpiginous lines which remain for a long period and may be permanent.

While every part of the cutaneous surface may be attacked, the face and scalp commonly escape. According to most authors, the hair follicles and the hairs are not affected, although Königer asserts that the hair of the body is practically destroyed on those parts where the disease exists. Castellani has observed that the nails, too, may be involved, becoming greatly thickened, contrary to the statement of Tribondeau that these as well as the hair are always exempt. Intense itching accompanies the disease, which is greatly increased by high temperature and by certain articles of food, such as fish. According to Castellani, a moderate eosinophilia is present, most marked in old and extensive cases, and occasionally signs of anæmia. The patient's general health seems to be little, if at all, affected. The malady occurs only in tropical regions, where the humidity and temperature are high and the latter is subject to but little variation. It prevails in the Malay Peninsula and Malay Archipelago, in Burma, southern China, and the islands of the South Pacific. As has been pointed out by Manson, its distribution corresponds closely with that of the cocoanut tree.

Etiology.—The cause of the affection is a parasitic fungus resembling in many of its characters the trichophyton; indeed, Sabouraud

considers it a large-spored variety of this organism but little different from the large-spored European trichophyton of animal origin. Its etiological relationship to *T. imbricata* was first demonstrated by Manson in a series of inoculation, experiments in which he succeeded

FIG. 149.—Tinea imbricata (R. Koch).

in reproducing the malady. The fungus is present in great abundance and is found only in the epidermic scales where it forms an interlacing network of mycelia, with comparatively few spores. Castellani, who has recently studied the organism as it is found in Ceylon, would create a new genus for which he proposes the name *Endodermophyton*,

of which two species are found, viz., *E. concentricum* and *E. indicum* (Fig. 150).

Diagnosis.—The disease with which Tinea imbricata is most likely to be confounded is ringworm of the body, or tinea circinata. In ringworm the number of patches is usually small, often there is but a single one, and the centre of the patches is usually clear, although exceptionally there may be two or three concentric rings; scaling is slight, and itching, if present at all, is trivial. In tinea imbricata, on the other hand, the disease is usually widely disseminated, the greater part of the trunk and extremities often being covered; the patches are made up of many concentric rings, and beneath the scales are numerous pigmented concentric and sinuous lines; the scales, which are large and very abundant, show an imbricated arrangement, and the itching is usually very severe.

It is sometimes mistaken for ichthyosis, but the large papery scales are unlike those seen in this affection; and the readily demonstrated fungus, which exists in great abundance in the scales, makes the differential diagnosis between these two affections an easy one.

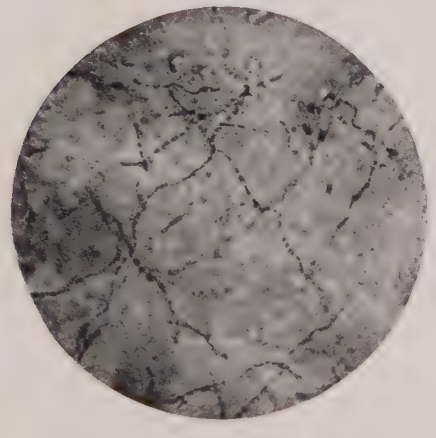


FIG. 150.—Mycelia in tinea imbricata.

Treatment. — The clothing should be thoroughly sterilized by appropriate means, or, if these are lacking, burned, which is perhaps better than to attempt to sterilize them. Manson found strong liniment of iodine, about double the strength of the formula of the British Pharmacopœia, an effective remedy, a part of the trunk or a limb being covered at each application. An ointment of chrysarobin containing from 5 to 10 per cent., well rubbed in once a day, is likewise a very efficient parasiticide application. Castellani recommends resorcin dissolved in compound tincture of benzoin, one to two drachms (4.0 to 8.0), to the fluid ounce (32.0), painted over the affected regions freely once a day. During the treatment the patient is given a hot bath once or twice a week and scrubbed with sand-soap. The same author finds formalin effective on small patches, but as it causes pain and severe inflammation it must be used with care; sulphur, recommended by some, has in his experience been useless.

Prognosis.—While there are a number of remedies which are more or less effective in killing the fungus, its great abundance and wide distribution make treatment difficult and prolonged, and relapses are common. In the early stages, however, when the patches are small and limited in number, it may usually be readily checked by the use or any of the above-mentioned parasiticide applications.

ERYTHRASMA

This affection was first described by Burckhardt, in 1859, and again in 1862 by Bärensprung, and has been studied more recently by Balzer and Dubreuilh, Koebner, de Michele, Ducrey and Reale, and others.

Definition.—Erythrasma is a disease due to a vegetable parasite, affecting particularly regions in which skin surfaces are in contact, such as the genito-crural and axillary regions.

Symptoms.—It occurs as rounded, rosette-like, or irregularly shaped, non-elevated, slightly furfuraceous plaques with well-defined borders which in the beginning are a bright-red color, but later become a darker brownish-red. The disease is situated in the great majority of cases in the inguinal regions and on the inner surface of the upper thighs where they are in contact with the scrotum, in the cleft between the buttocks, and in the axillæ. Less frequently it is observed in the bend of the elbows, beneath the breasts in women, and in the folds of skin of the abdomen in the obese. Exceptionally it spreads from these regions to the free surfaces of the skin on the trunk and extremities, covering in rare cases considerable areas as in the case seen by Besnier in which the eruption covered the thighs and the upper arms.

Subjective symptoms are trivial, or may be wholly wanting, the patient discovering the disease by chance; occasionally there is slight itching.

The course of the disease is slow, and its duration indefinite. Usually the patches after reaching moderate dimensions cease to enlarge, or increase almost imperceptibly.

Etiology and Pathology.—Erythrasma, while apparently quite common in certain parts of Europe, as in France, is decidedly infrequent in the United States. It is uncommon before puberty, and is much less frequent in women than in men.

It is due directly to a parasitic fungus discovered by Burckhardt in 1859, to which Bärensprung later gave the name *Microsporon minutissimum.* This fungus, which is found only in the horny layer of the epidermis, belongs to the order of hyphomycetes, and consists of slender, irregularly jointed, non-branching threads with cylindrical swellings which form an abundant interlacing network, in the meshes of which are scattered small numbers of minute spores. The mycelia or threads are unusually slender, measuring according to Sabouraud from .8 to 1.3 microns in diameter.

De Michele succeeded in transmitting the disease to healthy individuals by inoculating cultures of an organism obtained from the scales, but Ducrey and Reale failed in similar attempts. The latter authors found an organism presenting characteristics like those of the *Microsporon minutissimum* in the skin of sound individuals, and think, consequently, that special conditions of soil, etc., are necessary to produce the disease.

Diagnosis.—The affection may at times bear considerable resem-

blance to tinea versicolor; indeed, it was at first thought by a number of authors to be a form of this disease, but its red color, its usual limitation to the genitocrural region and the axillæ; the slight tendency which it shows to spread to other regions, and the microscopic examination serve to distinguish it from that malady. In tinea cruris the oftentimes considerable inflammation accompanied by more or less marked itching, and the easily demonstrated presence of the epidermophyton, an organism which is quite unlike the *Microsporon minutissimum*, will serve to prevent mistake.

Treatment.—Erythrasma does not readily yield to treatment; and relapses after apparent cure are frequent. Parasiticide lotions such as a solution of hyposulphite of soda, one drachm (4.0) to the fluid ounce (32.0), or a solution of mercuric bichloride, 1:5000, may be used with good effect; or the patches may be painted daily with tincture of iodine. Behrend found a 10-per-cent. chrysarobin ointment act as a specific, producing a cure in a few days; of course, such an ointment should be used with caution in regions like the groin, where its use is likely to cause more or less severe dermatitis.

PINTA

Synonyms.—Mal de los pintos; Mal del pinto; Caraate; Quirica; Spotted sickness; Fr., Caraté.

Definition.—A contagious disease endemic in certain parts of tropical America, particularly in Mexico, Central America, and the northern portion of South America, characterized by scaly, variously colored patches.

Symptoms.—The disease usually begins upon the uncovered parts, such as the hands and face, but may occupy any part of the skin except the palms and soles. According to some authors, in exceptional cases general symptoms, such as fever, headache, and gastric disturbance, precede the eruption, which appear some weeks later; the correctness of this observation is, however, somewhat doubtful. The eruption consists of scaly patches of various colors; some are red, others a grayish-blue or violet, black, or a dull white. All the patches may be of one color, or all these colors may be present at one time, giving a very striking piebald appearance to the skin. The color of the individual patches, however, does not change, but remains the same throughout the disease. The extent of the eruption varies; it may be limited to a few small patches or there may be many which, eventually coalescing, cover the entire cutaneous surface. The patches vary much in shape and arrangement; they may be round or irregularly shaped, well circumscribed or ill-defined. In old cases the skin is dry, rough, and desquamating; and in the red form there may be thickening, with hyperkeratosis, fissuring, and ulceration, particularly in the flexures of the joints; the mucous membranes adjoining the skin may eventually be involved. When hairy parts are attacked, the hair becomes thin and loses its color, as in patches of vitiligo. Itching, which at times precedes the appearance of the

discoloration, is at first moderate, but as the disease progresses becomes severe. A disagreeable odor accompanies the malady, which has been compared to that given off by mildewed linen, or to the urine of the cat.

The course pursued by the disease is a chronic one, but the several varieties present some differences in this respect. In the red form the patches spread very slowly, or may even remain without much change for a considerable time, while the blue and black forms spread rapidly and may cover large areas in a short period.

Etiology and Pathology.—Pinta is found only in hot and moist climates. Neither age nor sex seems to exert any influence upon its occurrence; it occurs at all ages and in equal numbers in the two sexes. According to Montoya Florez, the blue and black varieties are found chiefly in negroes, while the red form attacks principally whites. It is seen chiefly among the dirty and ill-cared-for and in those who work outdoors. Gastambide has described a fungus consisting of pigmented spores and mycelium found in the epidermis which he believed to be the cause of the malady. Montoya y Florez, who has made careful and extensive studies of it as it occurs in Colombia, was not able to confirm Gastambide's findings. He regards the several varieties of the affection as aspergilloses of the skin due to an aspergilloid fungus which is found in the epidermic scales as long, slender, smooth, dichotomous threads which in place form a close network. This fungus is probably a saprophyte, since Montoya has found in mine-water and in certain varieties of the mosquito and other insects a fungus identical with that present in the violet patches. In the blue and black forms, only the more superficial portions of the epidermis are affected; but in the red and white patches, the deeper portion of the epidermis and, according to Iryz, the corium are involved. In all probability the white patches do not represent active disease, but are a secondary leucoderma resulting from the destruction of the normal pigment by the fungus.

Diagnosis.—The diagnosis presents few or no difficulties. The peculiar colors of the individual patches and the frequent parti-colored effect of the eruption as a whole, together with the presence of the fungus in the scales, are features by which it is easily distinguished from other affections.

Treatment.—The treatment, which is practically that of other mycotic diseases of the skin, consists in the application of parasiticide ointments and lotions to the diseased areas. Montoya finds that in the superficial blue and black forms and in cases not over six months old, tincture of iodine painted on the patches once a day is promptly curative. In older cases he paints a 10 per cent. solution of chrysarobin in chloroform over the patches, at first every four, later every eight days, painting traumaticine over the chrysarobin after the chloroform has evaporated. According to Barbe, citrine ointment is the remedy most employed in Colombia, two applications to each patch being sufficient for a cure; of course, mercurial ointments must be used cautiously over large surfaces or mercurialism may follow.

CHAPTER X

INFLAMMATIONS DUE TO ANIMAL PARASITES

PEDICULOSIS

Synonyms.—Phthiriasis; Morbus pedicularis; Lousiness; Fr., Phthiriase; Ger., Lausesucht.

Definition.—A disease of the skin due to an animal parasite, the pediculus, characterized by a multiform eruption chiefly of secondary character the result of scratching.

The pediculus is an apterous insect belonging to the family of Pediculidæ, of which there are three varieties parasitic in man: *Pediculus capitis, Pediculus corporis,* or, more accurately, *Pediculus vestimentorum,* and *Pediculus Pubis,* found respectively as their names indicate in the scalp, the clothing, and the pubic region. As a rule to which there are only occasional exceptions, each variety is confined to its own particular region, seldom invading any other.

Pediculosis Capitis.—In the beginning of the disease when the parasites are few in number the only symptoms are itching of the scalp, and ova or "nits" on the hairs. In a short time, however, scratching produces a variety of secondary lesions, such as excoriations, pustules, oozing, and crusted patches, in the average case most abundant in the occipital region, although every portion of the scalp may be affected. In women and girls the back of the neck below the margin of the hair is often the seat of a somewhat characteristic erythematous and finely papular eruption with numerous scattered, minute blood crusts. In long-standing, neglected cases, such as are seen in the careless and dirty poor, the entire scalp is covered with pustules and crusts composed of dried pus, serum, and blood, beneath which it is raw and oozing and in which are myriads of pediculi. The hairs, which are inextricably matted together, contain great numbers of ova which at a little distance make them look as if covered with dust. Not infrequently the posterior cervical glands are swollen, especially in children, and sometimes suppurate.

FIG. 151.—Pediculus capitis.

Etiology.—Pediculosis capitis is much more frequent in children than in adults, and in the poor and badly-cared-for than in the well-to-do and the cleanly (Fig. 151). Women are oftener affected than men,

owing probably to their long hair. There is apparently but little doubt that certain individuals, for unknown reasons, acquire pediculi more readily than others.

The pediculus is grayish in color, an elongated oval in shape, and varies in length from 1.5 mm. to 3 mm., the female being decidedly larger than the male. The head is triangular in shape and is provided with two jointed antennæ; the abdomen, which is the largest part of the parasite, has dark margins, and is divided into seven segments by deep marginal notches. The legs, which are six in number, are attached to the thorax and are provided with hairs and terminal claws. In the male the penis, which is wedge-shaped, is on the dorsal surface of the last abdominal segment. The ova or "nits" are grayish, somewhat lustrous, slightly translucent, pear-shaped bodies attached to the shaft of the hair, with the small end directed towards its root (Fig. 152). The female lays from 50 to 60 ova, which are hatched in six and are fully developed in twelve to fourteen days.

FIG. 152.—Ovum pediculus capitis containing embryo. (Magnified)

Diagnosis.—Although the diagnosis of pediculosis capitis can always be made without the slightest difficulty if even ordinary care is exercised, it is often mistaken for eczema of the scalp. Itching of the scalp, accompanied by a pustular eruption in the occipital region, should always lead to a search for pediculi and ova or "nits"; indeed, an eruption of this character in children is almost certain to be due to pediculi.

Treatment.—A popular and at the same time very effective method of killing the pediculi and ova is to apply refined petroleum (kerosene) to the scalp, a single thorough application usually being sufficient. Care should be taken that it does not run down over the forehead and neck, since it often causes considerable irritation when applied to the non-hairy skin. Instead of using the petroleum alone it may be mixed with balsam of Peru, one part of balsam to two of petroleum. A solution of bichloride of mercury, 1:500, in water or dilute alcohol, is a cleanly and effective remedy; it should be well sponged into the scalp and hair once a day for several days in succession. Tincture of coculus indicus, one part to three of alcohol, may be used effectively in the same manner. For the pustular eruption which is so often present on the scalp, nothing is better than an ointment of ammoniated mercury, thirty grains (2.0) to the ounce (32.0), applied twice a day; this ointment also exerts a decided parasiticide effect. The nits may be loosened by washing the hair with solutions of bicarbonate of soda or borax in warm water. Dilute acetic acid, ten to twenty minims to the ounce (32.0) of water, may be used for the same purpose; or it may

be added to the solution of bichloride of mercury mentioned above.

The hair in women and girls should not be cut off unless there is so much matting that it is impossible to properly apply the necessary remedies; in men and boys it should be cut short.

Pediculosis Corporis.—Pediculosis corporis begins with itching of the trunk and lower extremities, worse at night, and usually quite severe (Fig. 153). Within a little while secondary lesions, the chief of which are linear excoriations (Fig. 154), covered with blood-crusts, make their appearance over the shoulders, the sacrum, buttocks, thighs, and legs; and scattered pustules appear sooner or later as the result of a secondary infection with pus organisms. In alcoholics ecthematous pustules are common on the legs. The characteristic lesion, however, is a minute hemorrhage in the skin appearing at the point where the parasite has inserted his proboscis in feeding. This punctate hemorrhage must not be confounded with the minute blood-crusts which result from scratching the tops of small papules; the former, being in the skin, cannot be felt, while the latter make a slight elevation which is readily felt when the finger is passed over it. In a considerable proportion of cases more or less marked dermographism, with factitious urticarial wheals, is present; indeed, one of the most extraordinary examples of the former condition the author has seen occurred in a man with body lice. The distribution of the eruption is quite characteristic; it is markedly more abundant over the shoulders, around the waist, over the sacrum, and on the thighs than elsewhere, while parts not readily reached by the patient's fingers, as between the scapulæ, often show little or nothing; uncovered parts, such as the face and hands, are entirely exempt. In long-standing cases, especially in the old, the skin is dry, in places decidedly eczematous and thickened, and deeply pigmented. the so-called vagabond's disease When the pediculi are very numerous there may be more or less elevation of temperature, a symptom to which Jameson, and later Payne, have called attention.

Fig. 153.—Pediculus corporis.

Etiology.—Pediculosis corporis is seen most commonly in the middle-aged and old, the most aggravated examples being seen in the aged poor; it is decidedly uncommon in children.

The pediculus corporis resembles very much the Pediculus capitis, but has an oval head, and is decidedly larger. It dwells in the seams and meshes of the clothing, where it lays its ova, and is found on the skin only when it is feeding.

Diagnosis.—The numerous excoriations, most of which are linear, the distribution of the eruption over the shoulders, the sacrum, and

thighs, the presence of punctate hemorrhages in the skin presents a characteristic picture readily recognized; indeed, if the patient is stripped, the diagnosis can usually be made at a glance. While the

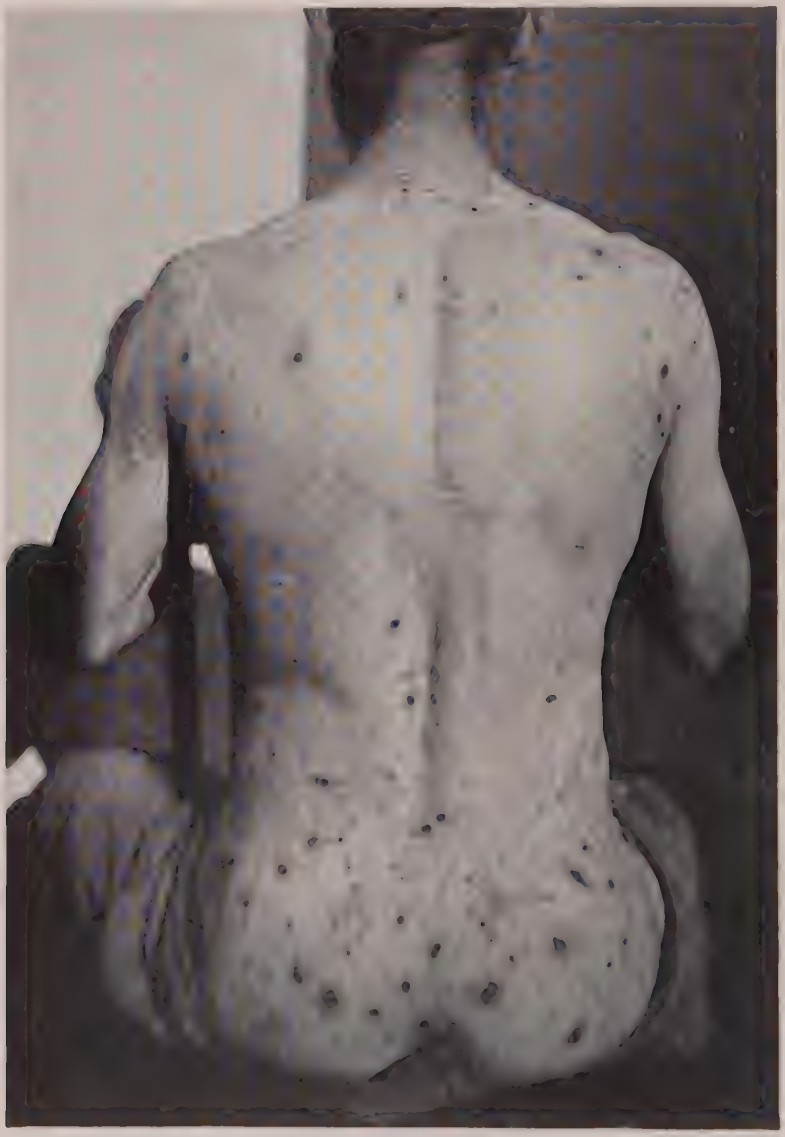


FIG. 154.—Pediculosis corporis.

parasites and the ova are usually readily found in the seams of the clothing, the search is not always successful, especially when the patient has recently changed his underwear. Since, according to

Jamison, the ova are sometimes deposited upon the lanugo hairs, these should be examined as well as the clothing in doubtful cases.

Treatment.—The most important procedure in the treatment of pediculosis corporis is the thorough disinfection of the clothing and the bedclothes, since the pediculi live in these and not upon the skin; indeed, in many cases this, with a bath, is quite sufficient to rid the patient of his disease. After the disinfection of the clothing and a bath with soap and hot water, a lotion containing two drachms (8.0) of carbolic acid and an ounce (32.0) of glycerin to the pint (500.0) of water may be applied twice a day for three or four days. Or in order to insure the destruction of stray pediculi and ova which may be on the lanugo hairs, an ointment of staphisagria, two drachms (8.0) to the ounce (32.0), or one of beta naphthol, 30 grains (2.0) to the ounce (32.0), may be rubbed over the trunk and extremities for four or five nights.

Pediculosis Pubis.—Pediculosis pubis, commonly known as crab lice, is characterized by itching in the pubic region, accompanied by an eruption of inflammatory papules, excoriations, and in the severer cases by more or less eczematous inflammation of the pubes, the scrotum, and inner surface of the upper thighs. The skin of the pubic region is sprinkled with a considerable number of minute reddish granules, the excrement of the parasite, particularly near the roots of the hair. Very special lesions sometimes present, known as *maculæ cæruleæ,* the *taches bleuatres* of the French, are bluish-gray macules or stains varying in size from a pea to a finger nail, scattered about on the skin of the abdomen, thighs, and sides of the thorax. These macules, which when present are usually limited in number, are accumulations of pigment deposited in the epidermis by the parasite, as has been proven by the experiments of Duguet. Both Jamison and Payne have noted that cases in which these stains are present usually suffer but little from itching. The pediculus is usually found clinging to the hairs near the root with its head partly buried in the mouth of the follicle; the ova, which are smaller than those of the other varieties of pediculi, are, like those of the Pediculus capitis, attached to the hair-shaft. Occasionally the parasites are found in the hair over the sternum, particularly in hairy individuals, in the hair of the axillæ, and exceptionally in the eyelashes and eyebrows (Fig. 155).

Etiology.—Pediculosis pubis is, as a rule, for obvious reasons, seen only in the adult, and is commonly contracted in sexual intercourse, although it may be acquired in other ways. Quite exceptionally it is seen in the eyelashes of children.

The parasite is smaller than the other varieties of pediculus, the female being from 1 to 2 mm. long; the male is only about half as large. The head is an oblong oval seated directly upon the thorax, which merges with the abdomen, the last being quite broad in comparison with its length. With the exception of the anterior pair, which are slight, the legs are stout and provided with strong claws by which

the parasite clings to the hair. The female lays from ten to fifteen ova, which are hatched in a week, and the young are capable of procreation in two weeks.

Diagnosis.—Itching in the pubic region should always suggest the probability of pediculi as its cause and lead to a search for the parasite and its ova, which are usually detected, when present, without much difficulty. Maculæ cæruleæ are pathognomonic of pediculosis pubis, as they are found in no other disease.

Treatment.—A very effective and at the same time a very dirty method of treatment is the thorough application of mercurial ointment to the regions affected, once a day for several days. Not uncommonly this ointment excites a severe dermatitis which may extend far beyond

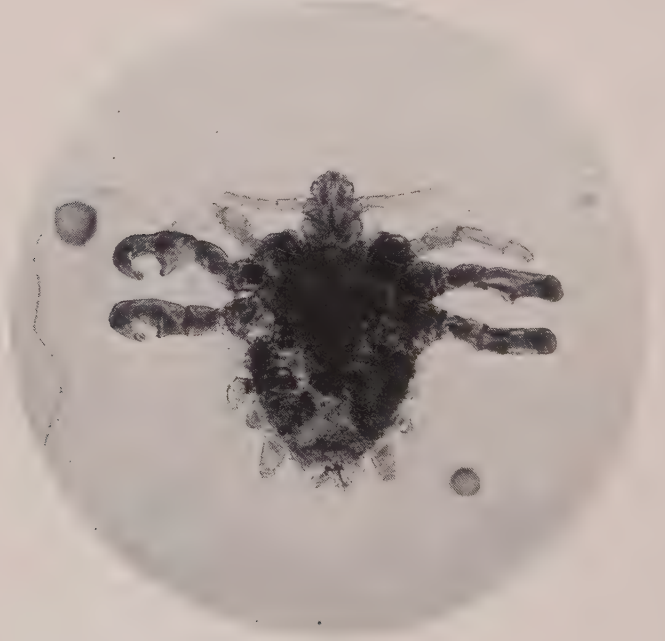


Fig. 155.—Pediculus pubis.

the region to which it has been applied, giving the patient much distress. A solution of bichloride of mercury, 1 : 500, sponged on twice a day, is much more cleanly and just as effective; this also should be used with some caution in order to avoid a mercurial dermatitis. If ten to twenty minims of acetic acid are added to each ounce (32.0) of this solution, it also serves to loosen the attachment of the ova to the hair so that they may be removed by washing. Solutions of bicarbonate of soda or of borax in warm water also serve the same purpose. The pediculi may be destroyed at once by the vapor of chloroform applied on a folded napkin, but if applied too long considerable inflammation of the skin is apt to follow. When the pediculi are found in the eyelashes they should be picked off with fine forceps, and a rather weak

ammoniated mercury ointment should be gently applied to the edges of the lids for a few days.

CIMEX LECTULARIUS

Synonyms.—Bed-bug; Acanthia lectularia; Fr., Punaise des lits; Ger., Bettwanze.

This insect, belonging to the order of Hemiptera, is found in all parts of the world, and its appearance is too well known to require any detailed description. It lives in beds and bed-clothing, in the crevices of walls and floors, in furniture, particularly in upholstered furniture, and only goes upon the skin in search of food. Like other members of this order its jaws are specially adapted for piercing and sucking rather than actual biting. When the skin is pierced by the proboscis of the bug, a wheal is produced in the centre of which is a minute hemorrhagic point and surrounding which is an area of hyperæmia; more or less itching and burning follow the puncture. The amount of inflammation varies a good deal according to the individual; in some there is little more than a hemorrhagic point, while in others there is marked swelling accompanied by severe itching and burning. In young children the punctures are frequently surrounded by extensive areas of hyperæmia so that bright-red patches half as large as the palm may be produced when there are several "bites" close together. The bites of the bedbug are sometimes mistaken for urticaria, but the central hemorrhagic point, the usually comparatively limited number of the lesions, and their duration will serve to distinguish them from that affection.

Treatment.—The itching which follows the bites may be relieved by the application of alkaline lotions, such as dilute ammonia, or solutions of bicarbonate of soda or borax, 5 to 10 grains (0.32 to 0.65) to the ounce (32.0) of water; phenol, 5 to 8 grains (0.32 to 0.52) to the ounce (32.0) of water, is also effective.

PULEX IRRITANS

Synonyms.—Flea; Fr., Puce commune; Ger., Gemeiner Floh.

The flea is widely distributed, and is especially troublesome in warm climates, where it may be the source of much annoyance. Its bite produces a minute hemorrhage surrounded by an erythematous halo, or less frequently a small wheal with a central hemorrhagic point. When the bites are very numerous, particularly on the lower extremities, a purpuric eruption may be produced, which differs, however, from the true purpuric eruption in showing minute dark hemorrhagic points. More or less itching accompanies the bites, but individual susceptibility varies much; in some the bite produces nothing more than a trifling, very evanescent itching, while in others the pruritus is extreme and lasts for some time.

The ordinary alkaline and phenol lotions usually employed for the relief of pruritus may be used to allay the itching.

Protection from the attacks of the insect may be afforded to some extent by wearing small bags of camphor or sulphur under the clothing.

SCABIES

Synonyms.—Itch; Fr., Gale; Ger., Krätze.

Definition.—A contagious disease of the skin due to an animal parasite, the Acarus scabei, characterized by a special lesion, the cuniculus or burrow, and a multiform eruption accompanied by itching of a severe grade.

Symptoms.—The disease begins with itching, usually worse at night, speedily followed or accompanied from the beginning by an eruption of papules, vesicles, and pustules which exhibit a decided predilection for certain regions, these being, in order of frequency, the sides and webs of the fingers (Plate XXX), the flexures of the wrists, the anterior axillary folds, the abdomen, the inner surface of the thighs, the penis in the male and the areola of the nipple in the female. When it has existed for some time, this characteristic regional distribution is usually much less noticeable, since the eruption may then occupy the greater portion of the cutaneous surface. However long the disease may last, the face is always spared except in very young infants, in whom this region may be, although infrequently, affected. In cases of average severity in addition to the papules and vesicles resulting from the burrowing of the female mite in the skin, there soon appear numerous secondary lesions the result of scratching, and secondary pus infection, such as excoriations, crusting, eczematous patches of variable extent, and pustules.

The distinctive lesion is the burrow or cuniculus, which is found chiefly in regions where the skin is soft and delicate, as the sides and webs of the fingers, the palms of the hands in children and in young adults whose palms have not been hardened by manual labor, the flexor surface of the wrist where it joins the palm; less commonly the areola of the nipple in women and the prepuce and glans penis in men. They also occur, but much less frequently and abundantly, in other regions, such as the anterior axillary folds, the umbilicus, and the buttocks (Plate XXXI), in the last-named region especially in those whose occupation compels them to sit several hours a day. This lesion, which occurs as a sinuous or zigzag, rarely straight, usually dotted, linear elevation of the epidermis, is, as its name indicates, a tunnel from 2 mm. to 2 cm. long or even longer, made in the epidermis by the female mite in which she deposits her ova as she travels along. With the aid of a loup, or even with the naked eye, the mite may be seen at one end of the burrow as a whitish or grayish dot which may be extracted with a little care and good vision, with the point of a needle. While burrows are present as a rule and may usually be readily found in the localities named, there are exceptions, and one occasionally looks for them in vain, commonly because they have been destroyed by rubbing and scratching; in the very early stage of the malady they may not have had time to be formed.

PLATE XXX

Scabies.

PLATE XXXI

Scabies.

The extent, amount, and severity of the eruption vary greatly. In the very early stages of the attack and in cleanly individuals there may be but a limited number of papules and vesicles about the fingers, in the axillæ, and on the abdomen; in long-standing cases and in the uncleanly, even after a few weeks, there may be all the symptoms of an extensive dermatitis, the entire trunk and extremities being covered with papules, vesicles, pustules, scratch-marks, and crusts. In infants and young children the hands and especially the palms frequently present numerous rather large flat pustules which may quite exceptionally bear some slight resemblance to the pustules of variola, and we have seen them mistaken for such (Fig. 156). While the face remains free in adults, even in long-standing cases with widespread

Fig. 156.—Scabies.

and abundant eruption, it may be attacked in very young infants whose faces are buried in the pillow or the mother's breast for a good part of the time. Although the hands are as a rule the earliest and commonest region to be attacked, they may be quite free from eruption in those who wash them often or in those whose hands are covered with lime and plaster, such as masons and bricklayers, or in machinists, whose hands are covered with oil and grime. In dark-skinned individuals in infrequent cases, a few scattered brownish-red, solid papules may be found on the anterior axillary fold, on the belly, and the shaft of the penis, which bear a considerable resemblance to syphilitic papules, but differ from these in being the seat of severe itching.

Itching, which is usually worse at night, is a prominent symptom, and is often so severe as to make sleep impossible. It is not always in proportion to the amount and extent of the eruption; patients with

but a few lesions often suffer quite as much as, or even more than, those with an abundant and widespread eruption.

Although scabies is a local disease without constitutional symptoms, it is occasionally accompanied by a slight transient albuminuria. According to Nicolas and Jambon, who have recently studied the subject, this albuminuria is fairly frequent; and in certain cases there may be actual nephritis. It is quite probable that in certain of these cases the renal symptoms are the result of the absorption of the local remedies employed, such as betanaphthol and balsam of Peru; but not all of them can be explained in this manner.

In an unusually severe form of scabies first observed in leprous subjects in Norway, hence known as *Norway itch* or *Scabies norwegica,* numerous crusts composed of epithelial scales and dried pus are scattered over various parts of the body, including the scalp, face, palms and soles, in which are great numbers of acari. Although first observed

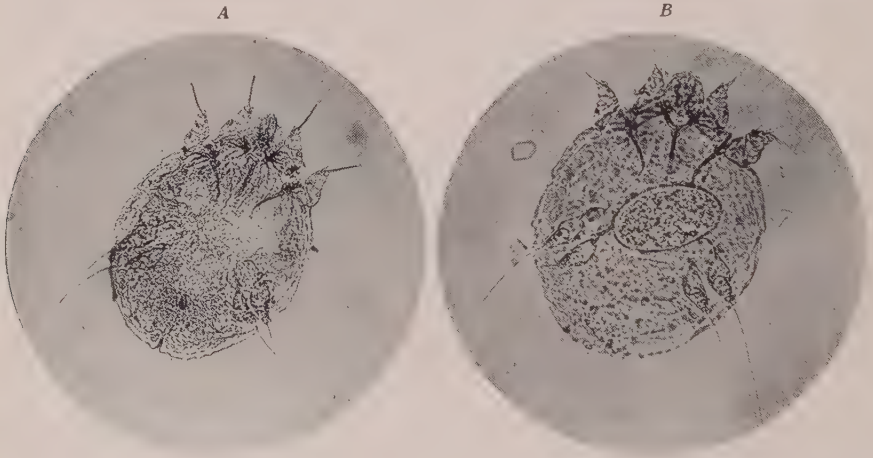


FIG. 157.—Acarus scabiei. *A*, male; *B*, female; latter contains ripe ovum.

in lepers, it is not confined to the leprous, but occurs in other subjects as the result of uncleanliness and neglect.

Quite exceptionally certain species of acari found in the domestic animals, such as the horse, the cat, and the dog, are transferred to the human subject, producing a dermatitis resembling that arising from the *Acarus scabies,* except that burrows are not present and the face is sometimes attacked. Spontaneous recovery usually takes place in the course of six to eight weeks, as these mites do not find the human skin a suitable habitat.

Etiology and Pathology.—Scabies is highly contagious disease and is readily transmitted by direct or indirect contact with an affected individual. It occurs at all ages and both sexes are equally liable to it. It is much more frequent among the poor and uncleanly than among the well-to-do, although the latter are by no means exempt. It is very commonly contracted by sleeping with an affected individual, or by

occupying his bed without a previous change of bed linen. It may be acquired through towels and other articles of the toilet, and possibly by shaking hands, although this mode of transmission is not common.

The active agents in its production is an animal parasite belonging to the class *Arachnidæ*, order *Acari*, the *Acarus scabiei*, also known as the *Sarcoptes scabiei* (Fig. 157). The female mite, which alone burrows in the skin and produces the symptoms of the disease, is oval in shape, about one-third of a millimetre long, and one-fourth of a millimetre broad. The dorsal surface is slightly convex and studded with a number of minute spines, and both dorsal and ventral surfaces are marked with numerous fine transverse striations. It is

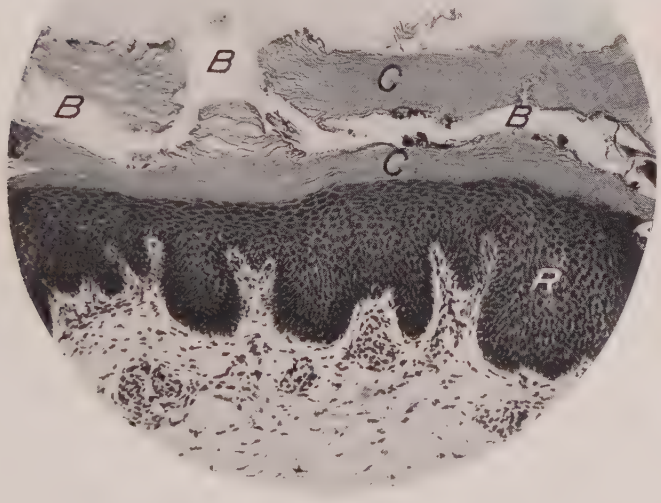


FIG. 158.—Burrow of scabies. *C*, horny layer of epidermis; *B*, burrow; *R*, rete mucosum.

provided with four pairs of legs, two pairs anteriorly which terminate in suckers, and two pairs posteriorly which terminate in long fine bristles or hairs. The male acarus is much smaller than the female, and produces no symptoms, not burrowing in the skin like the female; its sole rôle is to impregnate the female, after which it soon dies. It differs from the female in being provided with suckers on the fourth pair of legs instead of hairs, which serve as prehensile organs in the act of copulation. In the larval stage the acarus has but six legs, and does not reach its complete development until it has undergone a series of moultings.

When placed upon the skin, the female immediately begins to burrow and in a very short time forms a tunnel in which she deposits

ova as she travels along. The burrow (Fig. 158) containing the female mite, ova in various stages of development, and brown or black granular masses of fæces, is situated almost without exception in the horny layer alone, although according to Schisca the mite may enter the upper portion of the rete in regions where the horny layer is thin. Beneath the burrow, the rete and papillary layer of the corium show varying degrees of inflammatory reaction. In the former there may be slight intercellular œdema with a few leucocytes between the epithelial cells, while in the papillæ there is a moderate cellular exudate around the vessels. Not infrequently there is sufficient exudation in the rete to form vesicles which are situated either between the epithelial cells or between the upper layers of the rete and the horny layer, the latter forming the roof of the vesicle in which it is not unusual to see the burrow.

In a series of eighteen cases in which he studied the blood condition, Kolmer always found a slight but definite eosinophilia, the degree of which appeared to be in proportion to the extent and severity of the eruption.

Diagnosis.—Although the affection is usually recognized, errors in diagnosis are of frequent occurrence. An eruption accompanied by severe itching worse at night, situated on the hands, the anterior folds of the axillæ, the abdomen, and inner surface of the thighs, with lesions on the penis in men, is almost certain to be scabies. The burrow is the most characteristic symptom, indeed it is pathognomonic, and the finding of a single lesion is absolutely diagnostic of scabies; it should therefore always be carefully searched for in the regions already indicated. The diseases with which scabies is most likely to be confounded are eczema and pediculosis of the body. From both it is to be distinguished by the characteristic regional distribution and the presence of burrows. In eczema there is no history of contagion, while this is common in scabies; in the former the face is often involved, in the latter practically never. In pediculosis corporis the eruption is confined to the covered parts, while in scabies the hands are usually affected; in the former excoriations, particularly over the shoulders, are usually much more abundant and extensive than in the latter.

It must not be forgotten that the hands, which so frequently are the seat of a well-defined eruption, may be entirely unaffected in certain cases, even when trunk and thighs present unmistakable signs of the disease.

Treatment.—The treatment of scabies, which is wholly external, consists in the application of parasiticides to the skin, most frequently in the shape of salves or ointments, for the purpose of destroying the acarus; with the death of the mite the symptoms usually speedily subside. Among the oldest and most efficient of the parasiticides which may be successfully employed for this purpose is sulphur. An ointment containing from ten to twenty per cent. of precipitated sulphur is a most effective remedy. Sherwell finds that a drachm or two (4.0–8.0) of

dry powder of sulphur (sulphur lotum), gently rubbed into the skin at night, and sprinkled between the sheets, acts quite as efficiently as the ointment, and is much less disagreeable: a week of such treatment is usually sufficient for a cure.

Another equally efficacious remedy is betanaphthol applied as an ointment containing ten per cent. This is in some respects a more cleanly and therefore more agreeable application than the sulphur ointment, but occasionally its application is followed by severe burning lasting for a half hour or more, which some patients find intolerable. Balsam of Peru is a very active parasiticide, killing the acarus more promptly than sulphur, and is highly commended as a remedy in scabies, especially by the French; it is applied pure with a brush to the entire surface and allowed to remain on over night. Although effective, it is not an agreeable application, owing to its stickiness. Liquid stryax is an effective and non-irritating remedy, especially useful in infants and young children. It is to be mixed with one or two parts of olive oil or oil of sweet almond and to be well rubbed into the skin.

Whatever remedy be selected, detailed directions should be given the patient as to the manner in which it is to be used; without this, satisfactory results are seldom obtained, even with the best remedy. The application of the ointment selected should be preceded by a bath with hot water and green soap, well rubbed in; if, however, the skin is much inflamed, this preliminary bath should be omitted. From four to six ounces (120 to 180) should be given the patient with directions to thoroughly rub it in over the entire body, and with especial thoroughness into the hands, the axillæ, the abdomen, and the thighs, for four nights in succession, omitting the bath during this period. After the fourth rubbing, a bath with soap and hot water should be taken, clean underwear put on, and the bed supplied with clean linen. A period of three or four days may now be permitted to elapse without any treatment; if at the end of this period there is a return of itching and eruption, another course of rubbings with the ointment should be taken. As a rule to which there are few exceptions, the second course completes the cure. The patient should be advised that too long use of the ointment is quite sure to excite a dermatitis which is often quite as annoying as the original disease. Not uncommonly such a dermatitis is mistaken by the patient and his physician for a symptom of scabies, and the irritating ointment continued more vigorously than before with most annoying consequences; indeed, I have known such a dermatitis kept up in this way for many months, long after all the itch-mites were destroyed.

In children the strength of the ointments employed, particularly those which contain sulphur, should be less than those used in adults, otherwise the skin is likely to be greatly irritated.

Prognosis.—The prognosis is always favorable, a cure promptly following properly directed treatment. In a considerable proportion

of cases, however, itching persists for some time after all other symptoms have disappeared; but this usually yields to a carbolic acid wash applied twice a day, one or two drachms (4.0 or 8.0) to the pint (500.0) of water with fifteen to twenty minims of glycerin to the ounce (32.0), or an ointment containing two or three grains (0.15 or 0.20) of menthol to the ounce (32.0).

GRAIN ITCH

Synonyms.—Straw itch; Straw dermatitis; Barley itch; Mattress itch; Acrodermatitis urticarioides (Schamberg).

Definition.—A disease of the skin caused by a mite, the Pediculoides ventricosus, characterized by an eruption of wheals and vesicles accompanied by severe itching.

Although cases of this disease were reported from time to time by various observers, in France, Germany, and other countries of Europe during the latter half of the last century, and its relationship to grain and straw noted, it was not observed in the United States until about 1889–90, when cases of it began to be seen in Philadelphia and other parts of eastern United States. It was first described, in 1901, by Schamberg, and the etiological relationship of the pediculoides to it established by Goldberger and this author jointly in 1909.

Symptoms.—It begins with an eruption of small wheal-like papules, on the summits of which are minute vesicles with transparent contents which later become turbid or purulent. These lesions are scattered about over the trunk and extremities in variable numbers without any definite arrangement; occasionally they are found in the face in small numbers, but the hands and feet as a rule escape. After a few days the urticarial character of the eruption usually becomes less marked, and it then frequently resembles varicella. Owing to the intense itching which accompanies the eruption, many of the papules and vesicles have their tops torn off and are covered with small blood-crusts. When the disease has lasted some time, there are usually also linear excoriations, crusted eczematoid patches, and pustules resulting from infected scratches. The extent of the eruption varies much; there may be but a score or two of lesions or there may be hundreds of them covering the trunk and extremities. Itching of a most aggravated character accompanies the affection, which is always much worse at night and interferes greatly with the patient's rest.

As a rule the symptoms are entirely local, but occasionally the disease begins with chilliness, some elevation of temperature, headache, and nausea. In cases with extensive eruption there may be slight albuminuria. The disease runs a course lasting one or two weeks; but in cases in which the nature of it is not recognized and the patient in consequence continues to be exposed to the cause, it may last much longer, six or eight weeks.

Etiology and Pathology.—It occurs at all ages and in both sexes, and is seen only in the warm months between May and October. It is most frequently acquired by sleeping on a new straw mattress, or by

handling grain and straw. In the cases seen in Philadelphia some years ago the disease could be traced to straw mattresses in nearly every instance. Its cause is a mite, the *Pediculoides ventricosus,* belonging to the class *Arachnidæ,* order *Acarina,* found in straw and grain, where it preys upon certain grain-destroying insects. The mite, unlike the Acarus scabiei, does not burrow in the skin, but punctures it and at the same time injects an irritating substance which gives rise to wheal-like lesions. According to Schamberg, the tissue-changes in the lesions resemble those found in urticaria; and there is usually a slight increase in the number of leucocytes and eosinophiles.

Diagnosis.—The diseases for which grain itch is most likely to be mistaken are urticaria, scabies, varicella, and pediculosis corporis. In urticaria the lesions are very evanescent, often linear, and rarely vesicular; and the attack is usually of short duration. In scabies the distribution of the eruption is quite unlike that seen in grain itch, and burrows are usually readily found when looked for in the proper localities. In varicella the lesions are strictly vesicular, are commonly found on the face and scalp and on the mucous membranes of the mouth; in grain itch the last-named region is never attacked. In most cases a history of having recently occupied a bed with a new straw mattress or of having handled grain or straw is obtainable.

Treatment.—The most important measure is to ascertain the source of the disease; if this is a straw mattress, as is commonly the case, it should be abandoned at once and thoroughly fumigated with sulphur dioxide or formaldehyde before being used again, and the clothing should be dealt with in the same manner. With the recognition and avoidance of the cause it is usually soon cured.

One of the most effective local applications is an ointment containing thirty to forty grains (2.0 to 3.60) of precipitated sulphur and two to three grains (0.13 to 0.20) of menthol to the ounce (32.0); applied with gentle friction twice a day, this usually gives prompt relief from the intolerable itching.

COPRA ITCH

Quite recently Castellani has described an affection occurring among the workers in copra (dried cocoanut) in Ceylon, distinguished by an eruption of itching papules, papulo-pustules, and pustules, the first frequently covered by blood-crusts, situated on the hands, arms, legs, and sometimes the entire body, with the exception of the face. It begins on the hands and spreads thence to other parts, but the face is never affected.

It was found by Castellani to be due to a small mite which Hirst, to whom it was given for identification, regards as a variety of the Tyroglyphus longior. It does not burrow in the skin, but produces a dermatitis much in the same manner as the Pediculoides ventricosus, the cause of "straw itch." Castellani succeeded in producing the affection experimentally by placing the mite upon the skin beneath a piece of lint kept in place by a bandage.

The eruption resembles scabies somewhat, but differs from that affection by the absence of burrows and its spontaneous disappearance when the patient gives up his work so that he no longer comes in contact with the copra.

An ointment of betanaphthol, 5 to 10 per cent., was found useful by Castellani.

BROWN-TAIL MOTH DERMATITIS

In 1901 Dr. James C. White called attention to a dermatitis which he had recently observed in New England, resulting from contact with the caterpillar of the brown-tail moth (*Euproctis chrysorrhea*) which had been recently accidentally introduced into Massachusetts.

This dermatitis is characterized by erythematous patches and urticarial wheals which appear within a short time, twenty minutes to a half hour after contact, accompanied by more or less severe itching. In the mild cases the inflammation usually disappears in the course of three or four days, but in the severer ones, which may follow crushing of the caterpillar upon the skin, in which there are decided redness and swelling with patches of confluent wheals, it continues for several weeks. The exposed parts, such as the arms, face, and neck, are the regions usually attacked, but the covered parts may also be affected through the wearing of clothing with which the moth or the caterpillar has been in contact. The disease is seen most frequently in June, when the caterpillar is fully grown, but may occur at other seasons, when it arises from contaminated clothing.

As Tyzzer has shown, the dermatitis is the consequence of the penetration of the skin by the " nettling " hairs found on the caterpillar and moth and in the structure of the cocoon. These hairs are from 0.07 to 0.02 mm. in length, and are provided with three rows of barbs which prevent their withdrawal from the skin when they have once penetrated it. The irritation produced by these hairs is not merely mechanical, but the result of some irritating chemical substance which produces a peculiar reaction with the blood, and necrosis of the epidermal cells with which the hairs are in contact.

Treatment.—Calamine lotion, or a lotion of carbolic acid, one per cent., will usually afford relief; in the severer cases, however, the affection is often rebellious.

LEPTUS

Synonyms.—Harvest bug; Fr., Rouget; Ger., Erntemilbe.

The Leptus, of which there are several varieties, *Leptus Americanus, Leptus autumnalis,* and *Leptus irritans,* is not uncommonly a temporary parasite on the skin of man. It is a minute reddish insect, the larval form of the genus Trombidium, just barely visible with the naked eye. It varies in length from ⅓ to ½ mm., is oval in shape and is provided with six legs. It is found on various grasses and shrubs, particularly in low and moist places, and commonly attacks the ankles

and legs of workers in the fields, although it may occur on other parts of the body. According to Duhring the American variety is found on the scalp and in the axillæ as well as in other regions, and more frequently attacks children than adults. It is common on the bushes of the whortleberry or blueberry, and the pickers of this berry frequently suffer from its attacks. The mite buries its head in the skin, producing an eruption of papules, wheals, and vesicles accompanied by severe itching and burning; in severe cases more or less dermatitis of an eczematous character may result. The leptus is not a permanent parasite on the skin of man, but after a time voluntarily abandons its human host.

The application, once or twice a day, of an ointment of sulphur, thirty grains (2.0) to the ounce (32.0), or of betanaphthol of the same strength, or of balsam of Peru, one drachm (4.0) to the ounce (32.0), usually affords prompt relief. A lotion of phenol, one or two drachms (4.0 or 8.0) to the pint (500.0) of water, mopped on several times a day, is also efficient.

PULEX PENETRANS

Synonyms.—Dermatophilus penetrans; Rhynochoprion penetrans; Chigoe; Jigger; Sand-flea; Fr., Puce de sable; Ger., Sandfloh.

The sand-flea resembles in its general appearance the common flea, but is distinguished from the latter by its smaller size and the much greater length of its proboscis, which is as long as its body. Originally confined to tropical America, it has spread to Africa and parts of India, where it is of considerable importance because of the frequency with which it attacks the natives, causing painful and sometimes serious disease.

The impregnated female pierces the skin into which she burrows, and in which she remains until the completion of pregnancy and the discharge of the ova. The entrance of the insect into the skin produces painful swelling with inflammation, suppuration, and ulceration. As the consequence of secondary infection the resulting ulceration may extend considerably and gangrene may occur. The regions most frequently attacked are the feet, particularly between the toes and underneath the nails; but other regions are not infrequently attacked. While there are usually but one or two parasites in the skin, there may be, according to the observations of Manson, hundreds.

Treatment.—The insect should be removed, after enlarging the opening by which she has entered, with a clean needle, care being taken not to rupture the abdomen greatly distended by ova; the resultant small wound should be dressed antiseptically. The parasite may be killed by the application of chloroform or turpentine.

In regions in which the parasite is prevalent shoes should always be worn to protect the feet, and accumulations of dust and dirt in which the insect lives should be removed. The floors and walls of dwellings should be well sprinkled with pyrethrum powder at short intervals.

IXODES

Synonyms.—Wood-tick; Fr., Pou de bois; Ger., Holzbock.

Several varieties of ioxides or wood-tick, *Ixodes ricinus, Ixodes reduvius, Ixodes unipunctatus,* are occasional temporary parasites on the skin of man. The tick, which belongs to the order of *Acarina,* dwells on trees and shrubs from which it drops on passing individuals, and inserting its proboscis in the skin, continues to suck blood until it is distended to the size of a pea. When fully distended with blood it resembles a small pedunculated tumor attached to the skin; after a day or two it loosens its hold and drops off. A small wheal is produced at the site of the puncture which itches and pains more or less for some time. If the attempt is made to forcibly remove the tick while it is feeding the buried proboscis is apt to be torn off and left in the skin where it may give rise to severe pain and inflammation. If a drop of oil of turpentine, benzine, or tobacco juice is placed upon it, it at once withdraws its proboscis and dies.

A lotion of carbolic acid, five to eight minims to the ounce (32.0) of water, is useful to relieve the itching and burning which occur at the site of the puncture.

CYSTICERCUS CELLULOSÆ CUTIS

The occurrence of the cysticercus cellulosæ, the scolex of *Tænia solium,* in the subcutaneous tissue of man has been recognized since the middle of the seventeenth century, when it was first described by Bonatus. In parts of Europe, particularly in countries where the eating of raw or imperfectly cooked pork is common, such as in North Germany, the disease is not at all infrequent. Küchenmeister and Zürn have stated that in 5 per cent. of all cases of *Tænia solium* the skin, or more exactly the subcutaneous tissue, is affected. The cysticercus forms small elastic tumors varying in size from a pea to a cherry, occasionally as large as a walnut, over which the skin is movable and unaltered in appearance. They give the patient but little annoyance unless they are subjected to pressure or grow to an unusual size, when they may become inflamed and painful. As a rule several tumors are present and they may be very numerous; Lancereaux has reported the case of a woman in whom there were 1000, and Bonhomme found in a cadaver, in addition to 900 in the muscles, 2000 in the subcutaneous tissues. They are situated most frequently on the trunk, but are also found on other parts of the body. After a duration varying from three to seven years the parasite dies, the tumor shrinks, becomes hard and occasionally undergoes calcification, or is destroyed by inflammation and abscess.

Diagnosis.—Cysticercus is likely to be mistaken for syphilitic gumma, for lipoma, sebaceous cyst, and fibroma. From all of these it may be readily distinguished by exploratory puncture and examination of the fluid which escapes, in which hooklets are easily discovered.

ŒSTRUS

Synonyms.—Gad-fly; Bot-fly.

Certain dipterous insects belonging to the family *Œstridæ* not infrequently attack the skin of man, especially in tropical countries, such as Africa, and Central and South America, for the purpose of depositing their ova. In Shetland such invasion of the skin is said to be common, and confined to women. The ova are deposited beneath the skin through an opening made by the ovipositor of the fly, and the larvæ produce inflammatory swellings resembling furuncles with a central opening from which a seropurulent fluid escapes and through which the larvæ may be expressed. At times the larvæ burrow beneath the skin some distance, producing red or purplish sinuous lines, at the end of which suppuration eventually occurs, with the formation of abscess through which they escape fom the skin.

Treatment.—The larvæ should be removed through a free incision, and the cavity thoroughly washed out with antiseptic solutions, such as bichloride of mercury 1 : 1000, or carbolic acid, 1 : 40.

ANKYLOSTOMIASIS CUTIS

Synonyms.—Ankylostomum dermatitis; Uncinarial dermatitis; Ground itch; Water itch; Water pox; Water sores.

Definition.—An inflammation of the skin confined to the feet, due to the larvæ of an intestinal parasite, the *Ankylostomum.*

The *Ankylostomum* is a widely distributed nematode intestinal parasite met with practically in all tropical and subtropical regions. When it invades the intestinal canal it produces a progressive and eventually profound anæmia by abstraction of blood, the so-called tropical anæmia, miner's anæmia, hookworm disease, an affection very prevalent in the Southern States of the United States, in Porto Rico, and in many other countries in the tropics. In 1902 Stiles discovered that the affection as seen in the United States and Porto Rico is due not to the *Ankylostomum duodenale,* but to a closely allied species, the *Necator Americanus.* Through contact with soil contaminated by fecal matter containing the larvæ of the ankylostomum or the necator, a dermatitis of the feet is produced characterized by erythema, and an eruption of pustules, vesicles, pustules, and not infrequently, in the severer cases, by ulceration. The sides of the feet and the toes are the parts most frequently affected; severe itching usually accompanies the eruption. Apart from the annoyance which it occasions, in the severe cases interfering decidedly with walking, the affection is one of considerable importance, since the experiments of Looss, Schaudinn, Sandwith, and others have shown that the parasite may reach the intestinal canal through the skin as well as through the mouth.

Treatment.—The disease usually yields readily to cleanliness and the use of mild antiseptic lotions, such as a saturated solution of boric acid or a 1-per-cent. solution of phenol applied several times a day. An

ointment of ammoniated mercury or of calomel fifteen to twenty grains 1.0 to 1.30) to the ounce (32.0) may also be used. To prevent infection, shoes should be worn, especially during the rainy season.

DERMANYSSUS AVIUM ET GALLINÆ.

Synonyms.—Chicken louse; Bird mite; Fr., Dermanysse des oiseaux; Ger., Vogelmilbe.

The chicken louse or bird mite is occasionally a very transient parasite upon the human skin, where it produces at times considerable irritation with an erythematous eruption. As the mite seldom remains long upon the human subject, the occasional application of a carbolic-acid lotion, 1 : 40, for the relief of the irritation, is usually all that is necessary in the way of treatment.

DRACONTIASIS

Synonyms.—Dracunculus; Dracunculus medinesis; Filaria meddinensis; Guinea-worm; Fr., Ver de Guinée; Ger., Peitschenwurm.

Definition.—An endemic disease of the tropics due to the invasion of the body by a nematode worm, characterized by subcutaneous abscess. It is endemic in certain parts of Africa, particularly the West Coast, Abyssinia, and Upper Egypt, in Arabia, Persia, certain parts of India, such as the Deccan, and in tropical South America, to which it was brought by negroes from Africa.

Symptoms.—Introduced into the body by way of the gastro-intestinal canal, from which it soon enters the connective tissues, the worm produces no symptoms until, fully developed, it can be seen or felt beneath the skin. It frequently migrates to a considerable distance from the place at which it was first observed, travelling as a rule downwards. At the point where it is about to pierce the skin, which, according to Manson, is somewhere on the lower extremities in 85 per cent. of all cases, a small vesicle forms, which after a time ruptures, leaving a superficial ulcer or erosion from a half to three-quarters of an inch in diameter, in the centre of which is a small opening at which the head of the worm usually, but not always, presents. From this opening the head is gradually extruded, and in the course of some time the entire worm is expelled. It sometimes happens that the head is withdrawn, the opening closes, and the worm migrates to another locality where a new opening is formed. If, as Manson has shown, the skin in the region of the opening is douched with cold water, a small quantity of fluid escapes from the opening which is at first clear, but later milky, in which great numbers of larvæ can be seen with the microscope. If in attempts to extract the worm the head is torn off, as not infrequently happens, leaving the body in the skin, severe inflammation with lymphangitis and septic symptoms may occur. Usually there is but one worm, but there may be two or more. Exceptionally the worm dies prematurely without having pierced the

skin; abscess may then result or the worm may undergo calcification. According to some observers (Sutherland and Bartet), fever and urticaria may precede the appearance of the worm beneath the skin in a certain proportion of the cases.

Etiology and Pathology.—The female worm alone penetrates the tissues. It has an average length of about 90 cm., although much longer specimens have been reported, and is about 1.5 mm. in diameter. It is smooth, cylindrical in shape, with a rounded head containing a triangular mouth surrounded by two large and four small papillæ, and has a pointed, somewhat hook-like tail. The uterus occupies the greater portion of the body and contains enormous numbers of embryos.

Infection takes place from drinking-water containing a minute crustacean, the cyclops, which serves as the intermediate host for the worm. As was demonstrated by Fedschenko, the embryos upon reaching water enter the cyclops in which they undergo complete larval development, requiring for this development a period varying from five to nine weeks, according to the temperature of the water. In the gastro-intestinal canal the larvæ escape from the cyclops and undergo further sexual development; and the impregnated female migrates into the connective tissues, where she reaches maturity. Very little is definitely known about the male; but it probably dies in the intestinal canal and is discharged with the fæces.

Treatment.—The method of treatment employed by the natives in regions in which the Guinea-worm occurs is to seize the head, fasten it to a stick, and slowly, day by day, with very gentle traction, wind the worm around it. Not infrequently, however, the worm is torn, the embryos escape into the tissues, and serious inflammation with abscess and sloughing follows, with prolonged convalescence. Manson's method is to repeatedly douche the skin of the region occupied by the worm with cold water, which causes contraction of the uterus and expulsion of the embryos through the opening in the skin; after fifteen or twenty days the uterus is completely emptied and the worm emerges spontaneously or is absorbed without expulsion. The method of treatment devised by Emily is probably the best. A solution of bichloride of mercury, 1:1000, is injected into the body of the worm; this kills it, and it may then be readily extracted. Even if allowed to remain in the tissues, it is gradually absorbed without any serious results.

ECHINOCOCCUS CUTIS

Echinococcus cysts are occasionally found in the subcutaneous tissue where they form soft, fluctuating, slightly translucent tumors of variable size, the skin over them showing no alteration. Beyond a feeling of tension they are accompanied by no subjective sensations. In the course of a year or two the parasite dies, and the tumor occasionally undergoes calcification. The diagnosis is to be made by ex-

ploratory puncture and microscopic examination of the fluid contained in the tumor in which the hooklets of the parasite are present.

DEMODEX FOLLICULORUM

Synonyms.—Acarus folliculorum; Steatozoön folliculorum; Entozoön folliculorum; Fr., Acare des follicules; Ger., Haarbalgmilbe.

This parasite, which was discovered by Henle in 1841 in the ceruminous glands, and a year later by Simon in the sebaceous glands, is found in the skin, particularly of the face, ears, and upper third of the trunk. It is especially abundant in those with greasy skins, and from one to ten or twelve may be found in a gland. According to Gmeiner, who examined a large number of cadavers, it is found in practically all individuals in the sebaceous glands of the face; and although not present in the glands of the newborn, this observer has found it in infants a few weeks old. While in some of the lower animals, such as the dog, nearly related species of acarus may give rise to severe inflammation of the follicles, it is rarely pathogenic in man. However, De Amicis Majocchi, and Dubreuilh have reported cases of a yellowish-brown pigmentation of the skin resembling somewhat that of tinea versicolor, which seems to have been due to the demodex.

The parasite varies in length from $\frac{1}{6}$ to $\frac{1}{3}$ mm., and is made up of three segments, the head, the thorax, and abdomen. It is provided with four pairs of short jointed legs which are attached to the thorax; in the larval stage there are but three pairs of legs. The abdominal segment is two or three times the length of the thorax, and is cylindrical in shape with a tapering extremity.

In the case of pigmentation reported by De Amicis, washings with soft soap were curative, but in Dubreuilh's case treatment was unavailing.

LARVA MIGRANS

Synonyms.—Creeping eruption; Hyponomoderma; Dermamyiasis linearis migrans œstrosa.

Definition.—A disease of the skin due to the larva of *Gastrophilus* characterized by a sinuous burrow in the epidermis of variable length.

This affection was first described by Lee, in 1875, under the name of "creeping eruption"; and since that time additional cases have been reported by Crocker, Neumann and Rille, Stelwagon, Simon-Himmelstjerna, and others.

Symptoms.—The characteristic feature of the disease is a burrow in the skin represented by a slightly elevated serpiginous red line from an eighth to a sixth of an inch wide. The old part of the burrow is much paler than the recent portion and frequently shows a number of small vesicles and scales over it. It usually extends quite rapidly, advancing from a fraction of an inch to an inch or even several inches in the course of twenty-four hours; and in some cases appears

to advance much more rapidly by night than by day. It seldom moves in a direct line, but usually pursues a sinuous or irregular course, not uncommonly turning on itself; and in the course of some months it may have extended over a considerable portion of the surface. At the advancing end of the burrow, where the larva can sometimes be seen under glass-pressure with a loup as a black dot, there is frequently more or less itching and burning. The disease is most common on exposed parts, such as the hands, the face, and the feet, but it has been seen on the buttocks and extremities. As a rule there is but a single parasite, but cases have been observed in which there were two or more. The duration of the affection is variable; commonly it lasts for some months, but it may exist much longer, as in a case reported by Crocker in which it had lasted for more than two years. Although a rare disease elsewhere, it is quite common in certain parts of Russia, along the Volga. Attempts at recovering

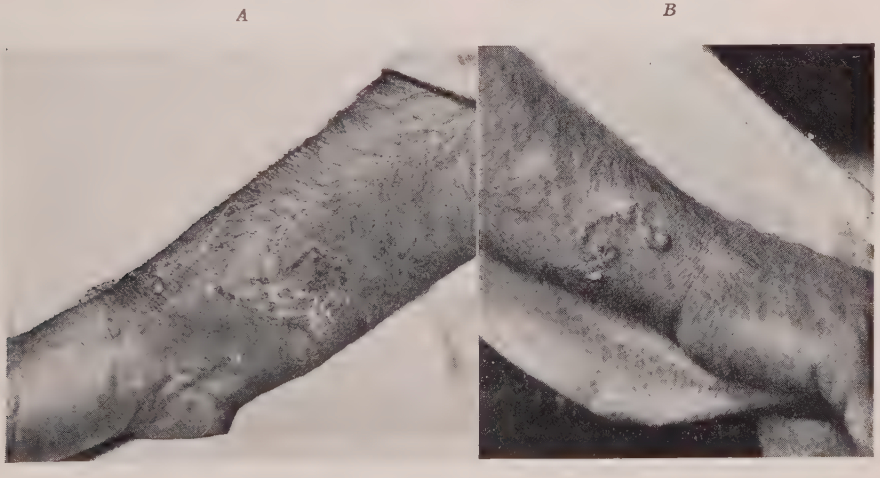


Fig. 159.—Larva migrans. *A*, old burrow; *B*, recent burrow.

the larva from the burrow, while usually fruitless, are occasionally successful.

Etiology and Pathology.—The malady is due to a larva identified by Himmelstjerna and Sokoloff as the larva of a fly belonging to the order of *Œstridæ*, genus Gastrophilus. It is about 1 mm. long, contains ten segments, has a mouth surrounded by hooklets and provided with two suckers. Sokoloff claims to have seen black nits upon the hair about the entrance of the burrow.

According to Lenglet and Delaunay, and Rille, who have studied the histopathology of the affection, the burrow is situated in the upper portion of the epidermis between the corneous layer and the rete. There is some intercellular œdema of the rete and a few leucocytes in the intercellular spaces. In the papillæ and around the vessels of the upper part of the corium there is a varying amount, usually moderate,

of cellular exudate in which Lenglet and Delaunay found eosinophiles. The cavity of the burrow is usually filled with cellular *débris*.

Treatment.—Excision of the advancing end of the burrow and of the parts immediately surrounding it is probably the most certain way of getting rid of the parasite. Stelwagon cured his cases by introducing into the skin a solution of bichloride of mercury, two grains (0.13) to the ounce (32.0), by cataphoresis over the advancing end of the burrow and applying nitric acid. The hypodermatic injection of a few drops of a 1 : 1000 solution of bichloride of mercury would probably be effective. In an extensive case very recently under the author's care (Fig. 159) the parasite was destroyed by the application of chloroform over the advancing end of the burrow for ten minutes at a time several times a day. The chloroform was applied by inverting a test-tube containing several drachms over the end of the burrow.

CRAW-CRAW

A good deal of uncertainty exists as to the nature of the disease described under this name, since, as Brault has pointed out, the natives of the West Coast of Africa, where it prevails, apply the term *kra-kra* to most itching vesico-papular eruptions; and in all probability several affections which are more or less etiologically distinct are included under it. O'Neill has described a contagious affection bearing some resemblance to scabies, but without burrows, characterized by an eruption of papules, vesicles, and pustules, accompanied by severe itching, situated on the trunk and extremities. He believes it to be due to a species of filaria which he found in sections of papules teased out and examined in water.

The disease described by Emily under this name begins with an eruption of red or brown-red spots situated on the backs of the hands and on the lower extremities, which itch intensely; pustules and multiple ulcers appear later. Manson has seen a similar affection in India and South China. The author believes the so-called veld sore of South Africa to be identical with it, or closely related to it.

Treatment.—Emily has found the liberal application of powdered boric acid, after thorough scrubbing with a 1 : 1000 solution of bichloride of mercury, very efficient in the treatment of the malady. Manson advises the application of warm lotions of carbolic acid, 1 : 20, followed by a dry dressing of boric acid. Infected shoes and stockings should be destroyed.

PLATE XXXII

Purpura simplex.

CHAPTER XI

HEMORRHAGES—HEMORRHAGIÆ

PURPURA

Synonyms.—Hæmorrhœa petechialis, Ger., Blutfleckenkrankheit.

Definition.—A disease characterized by cutaneous hemorrhage which appears as bright crimson or violaceous spots, lines, streaks, or patches which undergo the changes in color characteristic of effused blood.

Symptoms.—Hemorrhage into the skin may appear as pin-head to pea-sized, round or oval, non-elevated, crimson spots (petechiæ); as lines or streaks of varying length, usually short (vibices); as patches varying in size from a large coin to the palm of the hand or even much larger (ecchymoses), or it may be so extensive as to produce slightly elevated flat tumor-like swellings (ecchymomata, hæmatomata).

A number of varieties of purpura are recognized, viz., purpura simplex; purpura hemorrhagica; purpura rheumatica or peliosis rheumatica. While usually more or less distinct from one another in their clinical symptoms and more especially in their course, they may merge more or less with one another, the difference between them being often one only of degree.

Purpura Simplex.—(Plate XXXII).—As a rule, without any precedent or accompanying constitutional disturbance, but occasionally with slight malaise and fever, crimson pin-head to pea-sized spots appear in variable numbers upon the legs, and in the more pronounced cases upon the thighs; somewhat exceptionally a similar eruption occurs upon the upper extremities, usually the forearms. These do not disappear under pressure, and in the course of twenty-four to forty-eight hours become darker and purplish; later they become greenish, yellowish, then brown, and finally disappear, the changes in color being those which occur in the ordinary contusion. While the first eruption is passing through these changes, it is quite common for a new crop to appear which goes through similar changes, so that there are present all stages of the process at the same time. In the mildest cases there may be but a single crop and the disease comes to an end in ten days to two weeks, but much more frequently new crops appear at longer or shorter intervals, prolonging the disease to weeks or months, or, with intermissions of variable length, one or more years.

As uncommon variations from the usual type the hemorrhages may assume a circinate arrangement (Duhring, Stelwagon), or may appear as wheals (purpura urticans). It is somewhat uncertain, however, whether such cases properly belong to purpura: the former might very well be classified as hemorrhagic erythema multiforme, the latter as hemorrhagic urticaria.

Purpura Hemorrhagica.—Morbus maculosus Werlhoffii; Land scurvy.—This form differs from the foregoing chiefly in the greater severity of the symptoms, in the greater extent of the hemorrhages, which are not limited to the skin, but occur in the mucous membranes also. It may begin as a simple purpura with symptoms such as have just been described, or it may begin with considerable constitutional disturbance, such as headache and decided elevation of temperature, accompanied or soon followed by extensive ecchymoses upon the extremities and trunk and bleeding from the nose, gums, and, somewhat less frequently, from the bladder and bowels. Occasionally hemorrhages take place into the meninges or into the brain with apoplectic symptoms. In severe cases the amount of blood lost may be sufficient to put the patient's life in imminent danger or to cause death. The attack usually lasts from four to six weeks, but it may considerably exceed this and is apt, like other forms of the affection, to recur at irregular intervals. In a case under the author's care there were a number of attacks at intervals of about a year for ten years, the patient's life being in danger on several occasions from the extensive loss of blood from the nose and mouth. In rare instances the affection runs a very rapid course with symptoms of profound depression, terminating in death in the course of some hours or a day or two (purpura fulminans).

Purpura Rheumatica.—Peliosis rheumatica; Schönlein's disease.—As its name indicates, this variety is associated with rheumatic symptoms, such as swelling and pain of the joints, which may precede the appearance of the cutaneous symptoms, but usually appears coincidently with them. Some constitutional disturbance, such as malaise, loss of appetite, headache, and elevation of temperature which at times may be considerable, are present in varying degree in a large proportion of the cases. The eruption usually appears upon the lower extremities, which are more or less swollen and painful, especially in the region of the ankles and knees, and in the mild cases may remain limited to these, but in the severer ones the upper extremities are also affected. The eruption, which consists of pin-head to coin-sized smooth patches, which, when they first appear, are crimson, but soon become purplish, is apt to appear in successive crops, gradually spreading to new regions. Occasionally ecchymoses occur in the mucous membranes of the mouth and pharynx which in exceptional cases may be followed by sloughing (Osler). In a considerable proportion of cases an exudative erythema is present along with the purpuric eruption; occasionally urticarial wheals also appear. In a patient under the author's care for some time both forms of eruption were at times present, at others one or the other alone appeared, always accompanied by pain and swelling of the knees and ankles. Pericarditis, endocarditis, and nephritis are occasional complications.

In the variety known as Hennoch's purpura, although it was described by Willan long before Hennoch called attention to it, the

arthritic and cutaneous symptoms are accompanied by severe gastric and enteric disturbance, such as vomiting occasionally of blood, paroxysms of abdominal pain, and hemorrhage from the bowels. In addition to the cutaneous hemorrhages or alternating with them there may be eruptive lesions characteristic of erythema multiforme or of urticaria. A marked feature of this form is the tendency to repeated attacks which may occur at short intervals or after intervals of a month or longer. Although most frequently seen in children, it also occurs in adults as well.

Etiology and Pathology.—The causes of hemorrhage into the skin are numerous and of varied kind. They may follow mechanical injuries or the bite of insects such as the flea (purpura pulicosa); they may follow sudden obstruction to the circulation such as may occur in the paroxysms of whooping-cough or in the convulsions of epilepsy; they may follow a sudden change in the direction of the blood stream, such as occurs at birth (purpura neonatorum, Kaposi); and, lastly, they may follow long-standing inflammations, especially of the lower extremities, or slight unnoticed traumata in the old in whom the walls of the vessels have undergone senile changes (purpura senilis). All these, however, while presenting the superficial symptoms of purpura and occasionally so designated, are in fact only accidental hemorrhages.

Purpuric eruptions are in some instances an occasional, in others a constant, accompaniment of certain general infections, such as smallpox, scarlet fever, typhus fever, measles, varicella, epidemic cerebrospinal meningitis, and endocarditis. Rheumatism has long been regarded as a cause of purpura because of the frequent association of arthritis with the eruption, but it is doubtful whether the affection of the joints is actually rheumatic.

Although a number of microörganisms have been found in the blood by numerous observers (Martin de Goimard, Tizzoni and Giovannini, Letzerich, Kolb, Carriere, and a number of others), the relationship of these to the disease is still undetermined.

Török believes that all true purpuras are due to some infective or toxic agent in the blood of varying kind which acts directly upon the vessel-walls. This view finds much support in the fact that purpura at times follows the ingestion of certain drugs, such, for example, as iodide of potassium and salicylate of soda. In a young woman under the author's observation some years ago the administration of iodide of potassium was invariably followed by a purpuric eruption, but tolerance was soon established and the eruption usually disappeared in a few days, notwithstanding the continuance of the drug. If, however, it was suspended for an interval of some weeks or a month and then resumed, the purpura again appeared as before. Hemorrhagic purpura has been observed to follow the long-continued inhalation of the vapor of benzol used for manufacturing purposes (Selling). Purpuric eruptions are occasionally noted after injections of antitoxin, and snake-venom produces most extensive hemorrhages in the skin, as seen after the bites of venomous serpents.

Duke, in a study of the blood in purpura hemorrhagica, found a great diminution in the number of blood-platelets and he believes this to be the cause of the cutaneous hemorrhages. Graham Little has reported a small series of cases associated with hemorrhage into the suprarenal capsules, and he thinks it probable that the purpura is due to the absence of the suprarenal secretion from the blood consequent upon the destruction of the secreting structure of these bodies.

The blood findings have varied so much that no definite conclusions can be drawn from them. In some cases, as might have been expected, the number of erythrocytes has been greatly diminished, in others there has been a more or less marked leucocytosis.

The mechanism of the production of the hemorrhage is still a matter of some discussion. The blood may escape through rupture of the walls of the vessels, or through the unruptured walls by diapedesis. According to Sack, rupture of the vessels is present in the large majority of cases, escape of the blood by diapedesis being the exception. In a few instances the flow of blood in the small vessels and capillaries has been found obstructed by thrombi composed of masses of microorganisms. Exceptionally an endarteritis is present. The hemorrhage is situated in the papillary and subpapillary portions of the corium, between the collagen fibres, but may extend down to the subcutaneous tissue when extensive. In old hemorrhages brown granular pigment derived from the coloring matter of the blood is also present in considerable quantity.

Diagnosis.—The diagnosis is usually easy. The bright crimson color of the early eruption, which cannot be made to disappear by pressure, and the changes in color which it undergoes are quite characteristic features.

The symptomatic purpuric eruptions which occur in certain of the infectious diseases which have been already referred to are to be distinguished from the primary purpuras by the severity of the general symptoms, particularly the high temperature, and the associated eruptions characteristic of the several affections.

Rheumatic purpura may at first be mistaken for acute rheumatism when the arthritis precedes the eruption, but the appearance of cutaneous hemorrhages soon reveals the true nature of the attack. Errors may arise also when the lesions of erythema multiforme are associated with the affection, but petechiæ and ecchymoses appear sooner or later. In Hennoch's purpura the youth of the patient and the associated severe gastric and enteric symptoms are characteristic when taken in connection with the purpuric eruption.

Purpura may be confounded with scurvy or scorbutus, but the former never presents the peculiar swollen, spongy condition of the gums nor the brawny, discolored swellings in the muscles and subcutaneous tissues characteristic of the latter.

Prognosis.—The prognosis as to recovery is in most instances favorable, recovery taking place in cases of ordinary severity in a few

weeks, although the disease may be considerably prolonged by repeated recurrences. In hemorrhagic purpura the prognosis should be guarded, since the loss of blood may be so large as to imperil the patient's life or cause his death. Even when recovery takes place, severe anæmia and debility frequently follow for a considerable period. As has already been mentioned, cardiac and nephritic complications occasionally occur.

Treatment.—In all cases except the very mildest, the patient should be put to bed when possible, since nothing can take the place of rest in the recumbent position. On the other hand, the duration of the attack is frequently much prolonged if the patient continues to go about or is on his feet for hours at a time. Crocker found turpentine given in doses of fifteen to twenty minims three times a day, or by inhalation, one of the most reliable internal remedies. In the severe cases ergotin hypodermatically may be given for the purpose of contracting the vessels. Recently Wright has recommended the administration of calcium chloride for the purpose of increasing the coagulability of the blood; it may be given in doses of fifteen to twenty grains (1.0 to 1.30) three times a day. The author has employed it in a limited number of cases, but he is not satisfied that it is a remedy of much value. The tincture of the chloride of iron in doses of fifteen to thirty minims three or four times a day may also be given, with the view of combating the anæmia which results from the loss of blood and for its astringent effect. In hemorrhagic purpura the hypodermatic injection of ten to twenty minims of the 1 : 1000 solution of adrenalin chloride may be tried as recommended by MacGowan. In cases accompanied by arthritis the salicylates may be given in appropriate doses. Quite recently injections of blood-serum, human and foreign, have been employed, but with such varying results that nothing very definite can be said as yet about their usefulness.

PURPURA ANNULARIS TELANGIECTODES

Synonyms.—Telangiectasia follicularis annulata.

This affection, of which only a small number of cases has as yet been recorded, was described for the first time in 1896 by Majocchi. Additional cases have since been observed by Arndt, Vignolo-Lutati, Lindenheim, MacKee, and a few others. Very recently MacKee has published a new case, the first to be recorded in America, together with an exhaustive account of its clinical features, histopathology, and an analysis of the literature to date.

Symptoms.—The disease begins as well-defined red and violaceous spots situated upon the legs, which upon close inspection are seen to be composed of minute telangiectases. In these spots and at their margins dark-red points, minute hemorrrhages, appear, usually situated about the mouths of the follicles. The spots slowly enlarge peripherally until they reach the size of a coin, and as they enlarge they assume an annular appearance, the centre being more or less pig-

mented. The eruption is usually confined to the legs, but it may extend to the thighs, and occasionally occurs upon various parts of the trunk and upper extremities. The evolution of the lesions is very slow, many weeks being required to reach their full development, and the disease usually lasts for months or a year or two. After a variable period the patches become less well defined, change color, becoming a yellowish-brown, and finally disappear, usually, but not invariably, leaving a slight atrophy, occasionally accompanied by alopecia and pigmentation of the affected areas. As the early lesions disappear, new ones may appear, so that all the stages of their evolution and involution may be present at the same time.

Etiology and Pathology.—Nothing is known about the direct causes of the affection. Age and sex are apparently to be reckoned among the predisposing causes, since the great majority of the cases thus far observed have occurred in young male adults; only a few have been seen in children and still fewer in women.

The essential feature of its histopathology is an obliterating endarteritis and endophlebitis, which, according to MacKee, begin in the hypoderm and extend to the capillaries of the entire derma. In the early stages the vessels of the papillæ and subpapillary portion of the corium are tortuous and dilated and there is a moderate diapedesis of red cells. In the more advanced stages there is a moderate perivascular and perifollicular cellular exudate composed of lymphoid and connective-tissue cells, and scattered accumulations of granular pigment. In the final stages the epidermis is somewhat thinned, the papillæ are flattened out or have disappeared, and the hair follicles are more or less atrophied.

Diagnosis.—It is to be distinguished from the ordinary forms of purpura by the annular shape of the patches, the presence of pigmentation, and its slow chronic course. It may be mistaken for syphilis, but the telangiectases of the early stages and the atrophy of the final stage will serve to distinguish it from that affection.

Prognosis.—The tendency of the disease is toward recovery, although it may last for some months or even a year or two.

Treatment.—The treatment is not very satisfactory. Rest, especially in the recumbent position, and the use of a properly applied elastic bandage are the only measures likely to be of use. MacKee thought the local use of resorcin produced some improvement in his case.

SCORBUTUS

Synonyms.—Purpura scorbutica; Scurvy.

Definition.—A systemic disease usually occurring in epidemics, but also sporadically, characterized by mental depression, extreme debility with a tendency to syncope, swollen and spongy gums, and hemorrhages into the skin and from the mucous membranes.

Symptoms.—After a period of apathy and physical weakness lasting from one to several weeks, small hemorrhages appear as crimson

or purple spots on the legs, usually in the neighborhood of the ankles at first, and the gums become purplish, swollen, painful, and bleed readily. This condition of the gums is one of the most characteristic symptoms of the affection and usually appears early, but it may not appear until late, and exceptionally may be entirely absent. With the progress of the disease the purpuric eruption becomes more abundant and more extensive, and spreads to the thighs, trunk, and upper extremities. Extensive ecchymoses appear on the lower extremities, firm, discolored swellings appear in the muscles and subcutaneous tissues, due to extravasations of blood, the gums become still more swollen and ulcerate, the teeth become loose and occasionally drop out, and hemorrhages take place from the mouth, nose, and from the bowels. Hemorrhagic effusions take place in the joints and into the larger serous cavities of the body, attended at times by a rise in temperature. Ulceration of the skin frequently occurs, either at the site of the hemorrhages, in old scars, or after slight traumatism. In the advanced stages there is great emaciation with extreme prostration and œdema of the feet and ankles.

In infants and children the cutaneous symptoms are usually much less prominent, although petechiæ and ecchymoses occur as in adults, but usually fewer in number. Symptoms of rickets are frequently present, such as swelling of the epiphyses and the so-called beading at the junctions of the costal cartilages and the ribs. The most prominent and characteristic symptom is an extreme tenderness of the legs with periosteal swellings. Sponginess and swelling of the gums, characteristic symptoms in adults, are only present as a rule when the eruption of the teeth is partly or entirely completed. Occasionally there is a proptosis of one eye from subperiosteal hemorrhage in the orbit. Hematuria is also occasionally present and may be an early symptom.

Etiology and Pathology.—Scorbutus occurs as a rule in epidemics among sailors, prisoners, and others who have had an unbalanced diet, one in which fresh fruits, vegetables, and meats have been largely or entirely wanting. In infants, in whom it occurs chiefly between the ages of six and eighteen months, it is observed in those who have been fed upon proprietary foods from which fresh milk is absent, or in those who have been fed on condensed or sterilized milk.

A more or less marked diminution of erythrocytes is present, but no characteristic changes are discoverable in the blood and blood-vessels. Numerous hemorrhages are present in the skin, subcutaneous tissues, muscles, and in the serous cavities. Fatty degeneration of the heart, liver, and kidneys is not uncommon.

Diagnosis.—The epidemic occurrence of the disease in those who have been deprived of fresh fruit, vegetables, and fresh meat, the purpuric eruption, and especially the swollen and spongy condition of the gums, are so characteristic that the diagnosis is usually made without any difficulty. In children and infants it may be mistaken for

rickets, but the extreme tenderness of the lower extremities, the periosteal swellings, and the condition of the gums in those who have cut some or all of the teeth are characteristic symptoms, especially in artificially fed children.

Prognosis and Treatment.—Although always a serious affection, the prognosis is usually favorable unless proper treatment is too long delayed. As a rule, the free administration of an abundance of fresh fruit, lemon or lime juice, fresh vegetables, and raw meat juice is promptly followed by an amelioration of all the symptoms and eventually their complete disappearance. The medicinal treatment is to be conducted on general principles, and in many instances may be entirely dispensed with. For the inflamed and ulcerated gums, mild antiseptic mouth-washes should be employed.

CHAPTER XII

HYPERTROPHIES—HYPERTROPHIÆ

CLAVUS

Synonyms.—Corn; Fr., Cor; Œil de perdrix; Ger., Leichdorn; Hühnerauge.

Definition.—A circumscribed overgrowth of the horny layer of the epidermis situated, in most instances, upon the toes.

Symptoms.—Two varieties of corns are recognized, viz., hard and soft corns, the differences between the two being largely the result of differences in situation.

The hard corn, which is much the more frequent of the two varieties, is a small flat or slightly conical horny elevation about the size of a pea, with a smooth surface, in the centre of which is a small whitish spot, sometimes slightly elevated—the eye or core—which may be picked out with the point of a knife-blade and extends deeply downward in the epidermis. It is found upon the dorsal surface of the toes, over the bony prominences, on the outer side of the little toe, and less frequently upon the sole. It is usually quite sensitive to pressure and often spontaneously painful, frequently becoming more so with changes in the weather.

The soft corn is situated on the sides of the toes, and, owing to maceration, it is soft and grayish instead of hard and yellowish-white. It is usually much more painful than the hard corn, and often the source of much discomfort.

Both varieties frequently become inflamed, sometimes suppurate, and occasionally undergo ulceration.

Etiology and Pathology.—Corns are almost invariably the result of pressure or friction, and are commonly caused by the wearing of tight or ill-fitting shoes.

They are circumscribed hyperkeratoses, the result of pressure, and consist of an accumulation of horny epidermic cells which, in the central portion or core, which is conical, with the small end downward, are so compressed that separate layers can no longer be distinguished. Beneath the core the rete is markedly atrophied, but about the border of the lesion it is increased in thickness. The papillæ in the central portion are flattened out or obliterated, but at the margins are more or less elongated.

Treatment.—Pressure should be removed and friction avoided by the wearing of properly fitting shoes. After thoroughly soaking in hot water the top should be carefully pared with a sharp knife or scraped off with a dull knife-blade, or, what is better, a small curette, removing as thoroughly as possible the central portion or core; after-

ward a perforated felt plaster, the so-called corn-plaster, should be applied and worn for some time to ward off pressure. Salicylic acid as a ten to fifteen per cent. plaster or dissolved in the same quantity in collodion, or, better, liquor guttæ-perchæ, may likewise be successfully employed for the removal of corns.

CALLOSITAS

Synonyms.—Tylosis; Tyloma; Keratoma; Callus; Callosity; Fr., Callosité; Ger., Schwiele.

Definition.—An acquired circumscribed increase in the thickness of the horny layer of the epidermis, situated most frequently upon the palms and soles, but not confined exclusively to these localities.

Symptoms.—Callosities occur as variously sized, yellowish or grayish, smooth horny thickenings of the skin, with ill-defined borders, situated as a rule upon the palms, palmar surface of the fingers, and upon the soles, in the last-named region particularly upon those parts especially exposed to pressure, such as the base of the great toe and the heel. Although the just-mentioned localities are those in which they are most frequently observed, they may occur upon other parts when subjected to long-continued or often-repeated pressure, as happens in certain occupations. Although usually unattended by any noteworthy subjective symptoms, they occasionally become sensitive and painful, and exceptionally the underlying skin may inflame or even suppurate, the callosity being cast off as a result. Upon the sole of the foot, especially upon the borders of the heel, fissures may occur which are more or less painful.

Etiology and Pathology.—Callosities belong to the large group of occupational dermatoses and are very common upon the hands of laborers, of those who work at various trades, and of those who play much upon stringed musical instruments.

In uncomplicated cases they are pure hyperkeratoses; there is a greater or less increase in the thickness of the horny layer of the epidermis, usually with little or no change in other parts of the skin, although there may be atrophy of the rete as the consequence of pressure from the overlying thickened horny layer.

Treatment.—When the pressure which has caused them is removed, moderately developed callosities usually disappear. When large and thick they may be soaked thoroughly in a warm solution of bicarbonate of soda or borax and afterward pared down with a sharp knife or scraped off. The continuous application of a ten to twenty per cent. plaster of salicylic acid for a week or two is likewise an effective method of removing them; a fresh piece of the plaster should be applied every two or three days, scraping or rubbing off the softened surface before applying the fresh plaster.

CORNU CUTANEUM

Synonyms.—Cornu humanum; Cutaneous horn; Fr., Corne de la peau; Ger., Hauthorn.

Definition.—A circumscribed elongate horny growth resembling the horns of animals.

Symptoms.—Cutaneous horns vary much in size, shape, and general appearance. They may be cylindrical, flat, or conical; straight, curved, twisted, and in rare cases branched; yellowish, grayish, brown, or blackish, and vary in diameter from 0.5 to 3 or 4 cm., and in length from 3 or 4 m. to 25 or 30 cm. in rare cases; Sutton refers to a case in which a horn seated in the centre of the forehead, curving downward in front of the face, extended below the chin. Their surface is quite hard, but they may be less firm in their interior. While, as a rule, they are solitary, there may be several, and in rare cases they may be very numerous, as in one recorded by Mansuroff (quoted by Janovsky), in which there were 133. They usually grow quite slowly, but in exceptional cases they may reach a considerable size in the course of a few months or even in a few weeks (Dubreuilh). When accidentally knocked off or pulled off, they are usually reproduced. As an infrequent occurrence they may fall off spontaneously. While they have been observed on practically all parts of the body, they are much more frequently seen in the face and on the scalp than elsewhere; in more than one-half of the 109 cases collected by Lebert, they were situated in these regions.

Etiology.—Cutaneous horns may occur at any age, but are infrequent before forty, and are somewhat more common in women than in men. They have their origin in sebaceous cysts and warts, may follow injuries, and exceptionally may be due to syphilis (Lewin and Heller).

According to Unna, there are two stages in the formation of a horn; in the first there are both acanthosis and hyperkeratosis, and in the second the former diminishes while the latter increases. The horny layer is enormously increased in thickness, out of all proportion to the changes in other portions of the epidermis, and the rete is likewise at first increased in breadth, but later is somewhat thinned by the pressure of the thickened horny layer. The papillæ are usually much elongated, but there are usually no other changes in the derma; occasionally, however, there are a slight increase in the number of connective-tissue cells and a moderate perivascular exudate of leucocytes.

Dubreuilh would make a separate variety of the multiple horns observed in young subjects, such as the cases of Mansuroff and Bätge, and would class them with the systematized nævi.

Prognosis and Treatment.—In most cases horns continue to grow slowly but steadily, but, as already observed, in exceptional cases they fall off spontaneously. In a certain proportion of cases, twelve per cent., according to Lebert, epithelioma follows.

The only effective treatment is surgical; the larger ones should be excised with the knife, together with a portion of the surrounding skin, to insure against recurrence; the small ones may be clipped off with curved scissors.

KERATOSIS SENILIS

Synonyms.—Keratoma senile; Fr., Acne sebacée; Acne concrète.

Definition.—A hyperkeratosis peculiar to middle and old age, characterized by yellowish, brownish, or blackish patches which show a decided tendency to epitheliomatous change.

Fig. 160.—Keratosis senilis—epithelioma.

Symptoms.—It occurs as pea- to dime-sized, seldom larger, often ill-defined, yellowish, brownish, or blackish, more or less elevated crusts, sometimes friable and rather greasy, seated on slightly erythematous areas, at others dry and horny without any other visible alteration of the skin. They are usually quite firmly adherent, and when forcibly removed present a number of small spines on their under

surface which have filled the dilated mouths of the follicles; the skin beneath is red, moist, or not uncommonly superficially ulcerated. Many of the crusts exhibit little or no change for months or years, but sooner or later some of them become thick and wart- or horn-like, and beneath them an epitheliomatous ulcer forms which pursues the usual course (Fig. 160). Upon the backs of the hands the crusts are frequently quite black and more or less depressed, and so firmly attached to the skin that they cannot be removed without considerable force. Along with the horny patches, the skin frequently presents evidences of senile change; here and there are patches of brownish pigmentation, whitish atrophic or scar-like areas, and telangiectases.

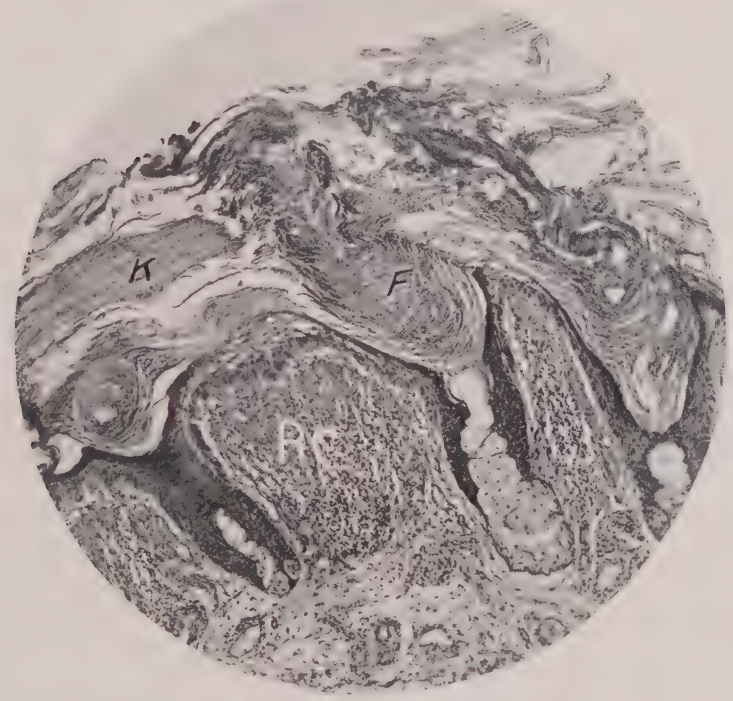


FIG. 161.—Keratosis senilis. *K*, Greatly thickened horny layer; *F*, follicle containing large horny plug; *R. C.*, round-cell exudate in papilla.

The malady shows a marked predilection for the uncovered regions, such as the face, particularly the cheeks and nose, somewhat less frequently the forehead, the rims of the ears, the back and sides of the neck, and the backs of the hands.

Etiology.—In the great majority of cases it occurs in those past fifty years of age, although it may occur as early as thirty-five or forty in exceptional cases. Its subjects are for the most part those whose occupation exposes them to the sun and air, and for that reason, probably, is much more common in men than in women, although the

most marked example the author has ever seen occurred in an Italian peasant woman who worked in the fields.

Pathology.—In a study of the histopathology of the affection made a few years ago, the author found an enormous increase in the thickness of the horny layer of the epidermis, in which many nuclei were still preserved, the greatest increase being about the mouths of the hair follicles and of the sweat-ducts, the former being greatly dilated and filled with horny plugs. The granular layer had completely disappeared everywhere except about the mouths of the follicles and the sweat-gland ducts. In the more recent lesions there was a moderate hyperplasia of the rete, with evidences of increased cell activity in the basal cell layer; in the older ones this hyperplasia was still greater and in places the rete was beginning to invade the corium in which there was a dense cellular exudate composed of mononuclear leucocytes plasma cells, and "mastzellen." In those with markedly depressed and tightly adherent crusts, such as are seen upon the backs of the hands, instead of a hyperplasia there was a more or less decided pressure atrophy of the rete. The sebaceous glands showed nothing abnormal, but the sweat-gland apparatus was invariably the seat of pathological changes. There was an abundant exudation of cells about the duct where it entered the epidermis; in places the lining epithelium of the coils showed marked proliferation, sometimes completely blocking the lumen, and in other places there was cystic dilatation of the coils (Fig. 161).

Diagnosis.—The appearance of these lesions is so characteristic that they are readily recognized. They are sometimes mistaken for senile warts, but the latter are only exceptionally found upon the face, are often limited to the back, and are usually quite elevated.

Prognosis and Treatment.—Every senile keratosis is a potential epithelioma; many, if not most, of the flat superficial epitheliomata so common in the face begin in this manner. While they may show but little alteration for several years, sooner or later ulceration takes place beneath them. In the earliest stages, when the crust is thin, an ointment of salicylic acid, two to three per cent., either alone or combined with three to four per cent. of sulphur, may be of service. Painting the patches with trichloracetic acid as recommended by Davis is likewise an effective treatment. Older and larger lesions may be destroyed by freezing with carbon dioxide "snow." They often disappear under X-ray treatment in a very satisfactory manner. When ulceration has once taken place, they should be treated as epithelioma.

KERATOSIS PILARIS

Synonyms.—Lichen pilaris; Pityriasis pilaris; Keratosis suprafollicularis.

Definition.—A follicular hyperkeratosis characterized by small horny papules situated at the mouths of the hair-follicles.

Symptoms.—The eruption which distinguishes this affection con-

sists of discrete, pin-head-sized, horny elevations occupying the mouths of the hair-follicles. These may be readily picked out by the finger-nail, leaving a small depression which often contains a coiled or broken hair; or the papule may be pierced by the hair, which is at times broken off and then appears as a small black dot in the centre of the papule. It is situated most frequently upon the outer surface of the upper arms and thighs, somewhat less frequently upon the arms and legs, and in extensive cases upon the trunk. The skin between the papules is, as a rule, normal in appearance, but is usually dry. Sub-

Fig. 162.—Keratosis pilaris.

jective symptoms are frequently absent altogether, but there may be a moderate amount of itching. It varies much in the degree of its development; often the lesions are scanty and limited to the arms and thighs (Fig. 102), or they may be present in great numbers, giving the skin a coarsely granular aspect and a grater-like feel.

Etiology.—The malady is most frequent in children and young adults, and is seen in its greatest development in those who do not bathe frequently, but is by no means limited to them. It is often present to a marked degree in those with ichthyosis, although a number of authors regard this form as a part of the ichthyosis and a dis-

tinct affection. It is commonly much more noticeable in winter than in summer.

Pathology.—The disease is a hyperkeratosis limited to the mouths of the hair-follicles, which are more or less completely blocked by an accumulation of cornified epithelial cells. Unna regards it as an inflammation; he always finds a greater or less increase of connective-tissue cells, both around and within the follicles, and a permanent dilatation of the vessels in about one-third the cases.

Diagnosis.—The characteristic features of the eruption are the horny character of the papules; their follicular situation; their distribution on the extensor surfaces of the arms and thighs; and the absence of symptoms of inflammation. It may bear some resemblance to cutis anserina ("goose-skin"), but this is a transient affection due to cold or fear, which disappears with the exciting cause. It may be mistaken by the inexperienced for the miliary papular syphiloderm, but it never presents the red-brown color and tendency to occur in small groups characteristic of that eruption. It may resemble to some degree lichen scrofulosorum, but differs from that affection in attacking the extremities rather than the trunk, to which the latter is, as a rule, confined.

Treatment.—The treatment is much the same as that of mild ichthyosis. Frequent baths, preferably made alkaline by the addition of sodium bicarbonate or sodium biborate, four ounces to thirty gallons (128 to 100 L.), followed by inunctions of a 2-per-cent. ointment of salicylic acid in lanolin, seven parts, oil of sweet almond, or lard oil, one part, will usually soon bring about the disappearance of the eruption. The treatment must be continued for some time after the eruption disappears to prevent relapses.

LICHEN PILARIS SEU SPINULOSUS

Under this title Crocker has described an affection of the hair-follicles closely resembling keratosis follicularis, and of which it is probably a variant. It is characterized by an eruption of quite small, red, conical papules situated about the mouths of the hair-follicles, which contain a small spine in the centre. After a time the redness disappears, the papules become the color of the skin, and may then remain unaltered for an indefinite period. The eruption is arranged in symmetrically disposed patches of various sizes and is situated most commonly upon the back of the neck, the extensor surface of the arms, the abdomen, the buttocks, in the region of the trochanters, on the posterior surface of the thighs, and in the popliteal spaces. Crocker never saw it attack the face, upper part of the chest, nor the hands and feet. It may be scanty or abundant, and is apt to appear rather suddenly in crops, patches coming out overnight.

Etiology and Pathology.—It occurs, as a rule, in children, is more frequent in boys than in girls, and occasionally is seen in adults. According to Crocker, there is first a hyperæmia, which is followed by a

perifollicular effusion and a hyperplasia of the epidermic cells lining the follicle. No study of its histopathology has been made, however.

Diagnosis.—It is to be distinguished from keratosis follicularis, the only affection for which it is likely to be mistaken, by the red color of the papules in their early stage and by their arrangement in patches.

Treatment.—The treatment is practically the same as for keratosis follicularis. Crocker obtained benefit from a liniment of soft soap and alcohol containing one drachm (3.40) of oil of cade to the ounce (30), rubbed in with a piece of flannel.

KERATOSIS FOLLICULARIS

Synonyms.—Keratosis vegetans (Crocker); Fr., Darier's disease; Fr., Psorospermose folliculaire végétante; Acné sebacée cornée.

Definition.—A chronic affection characterized by an eruption of brownish crusted papules, frequently follicular, symmetrically distributed, and showing a decided predilection for certain localities, such as the face and scalp, the axillæ and groins, but not limited to these regions.

Symptoms.—This infrequent and remarkable malady was first accurately described independently, in 1889, by James C. White and Darier, the former giving it the name keratosis follicularis, the latter calling it *"psorospermose folliculaire végétante."*

Exhibiting a decided predilection for those regions in which the sebaceous and sweat-glands are most active, such as the face and scalp, the sternum, the axillæ, and genito-crural regions, it is characterized in its early stages by pin-head to hemp-sized solid elevations which at first differ but little in color from the normal skin (Fig. 163). Schweninger and Buzzi, who had exceptional opportunity for watching the development of the lesions, assert that in their earliest stages they are red spots or very small red papules, a statement confirmed by Janovsky. As the lesions enlarge they become reddish or brownish and are covered with a grayish, brownish, or blackish adherent scale or crust, which upon removal is seen to be embedded in the dilated mouth of a hair-follicle or in a funnel-shaped depression in the epidermis, the imbedded portion being much softer than the top. As the disease progresses, these enlarge and increase in number, forming confluent patches about the temples (Fig. 164), on the sternum, in the groins and axillæ, covered with yellowish-gray or brownish fatty crusts. In regions where there are opposed skin surfaces, where there is more or less moisture, such as the axillæ and inguinal and genital region, the lesions reach their greatest development; here in the most advanced cases they form nodules and papillomatous masses covered with thick macerated crusts, underneath which superficial ulceration sometimes occurs and from which is given off a most offensive odor. Similar vegetating masses may form in the furrows behind the ears.

Upon the scalp the appearance is somewhat like that of a seborrheic dermatitis; it is covered with scales or yellowish crusts, beneath which is a moist, red, frequently slightly papillomatous, surface. The hair is usually unaffected.

Upon the backs of the hands and tops of the feet are numerous horny, corn-like elevations which at times are so numerous as to form a continuous horny plate, grayish or blackish in color, as in

Fig. 163.—Keratosis follicularis (Darier's disease).

the case reported by White. Less frequently a punctiform keratosis appears upon the palms and soles, in Darier's case as yellowish translucent points; or these regions may be the seat of a diffuse keratosis, presenting a uniform thickening of the horny epidermis.

The nails are usually more or less affected: they are thickened, furrowed longitudinally, brittle, with broken, ragged, free borders.

The progress of the malady is continuous and at first quite rapid, but later is apt to be slow. Occasionally acute outbreaks occur in

which new territory is invaded. In the course of many months or years the greater part of the surface may be more or less involved, and even in regions in which there are no crusts the skin is apt to be thickened and discolored. At times, however, it remains limited to certain restricted regions, as in the case reported by Bowen, in which the head and hands alone were affected. In a case under the author's observation a few years ago the eruption was limited to scattered lesions on the sides of the thorax and abdomen.

The subjective symptoms are often insignificant, but there may be at times quite severe itching. In the cases in which ulceration of the vegetations in the groin occurs, there may be severe pain. There are no general symptoms.

Etiology.—The early view that the affection was due to the invasion of the follicles by psorosperms was soon shown to be errone-

Fig. 164.—Keratosis follicularis (Darier's disease). Yellow crusts above and behind ears.

ous, the supposed parasites being nothing more than peculiarly altered epithelial cells. The direct cause still remains unknown. It is considerably more frequent in men than in women, and in the majority of cases begins in childhood or youth. In a considerable proportion of the reported cases the disease presented a markedly familiar character. White, Boeck, and Ehrmann observed two or more cases in the same family, and Pöhlmann and Trimble have each reported five cases occurring in three generations. This is regarded by most authors as evidence that heredity, in some cases, at least, plays an important rôle in its causation; but it might equally well be explained by contagion, although it is generally believed to be non-contagious.

Pathology.—The malady is an anomaly of cornification. As already remarked, Darier at first was of the opinion that the peculiar

round bodies present in the rete were psorosperms, hence the name which he gave it; but the later studies of Bowen, Boeck, Buzzi, and Miethke, and of Darier himself, have proved definitely that the so-called psorosperms are degenerated epithelial cells. Nor are the lesions confined to the pilo-sebaceous follicles, as at first supposed, but they also occur at the mouths of the sweat-gland ducts and in parts of the epidermis in no way connected with the glandular apparatus.

The histological changes are quite characteristic, and are found chiefly in the epidermis. There is a marked hyperkeratosis, and in

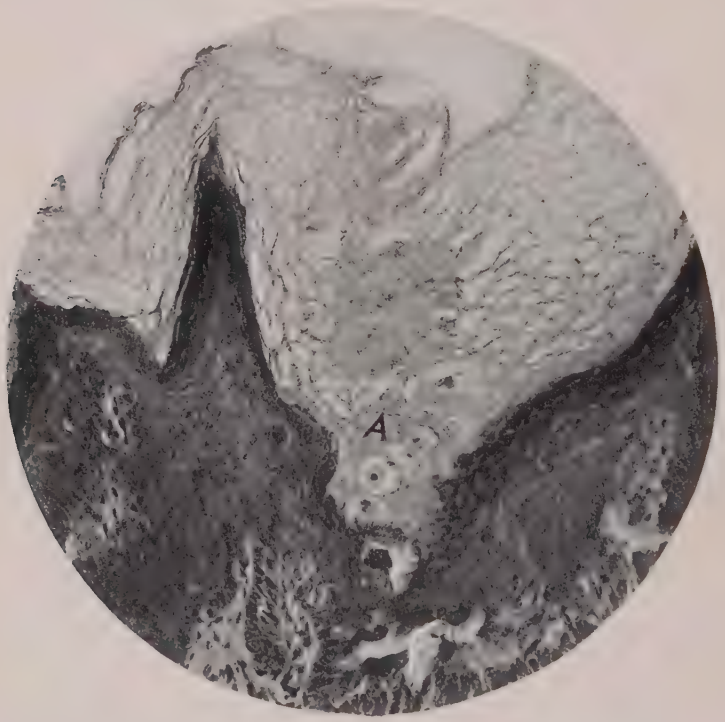


FIG. 165.—Darier's disease (keratosis follicularis). *A*, degenerated epithelial cells in a horny plug filling the follicle, formerly thought to be psorosperms. *F*, fissure in the rete mucosum.

follicular lesions the dilated funnel-shaped mouth of the follicle is filled with cornified epithelial cells. The most characteristic features are found in the rete. About the borders of the papule it is considerably broader than normal; the interpapillary prolongations are much increased in length, and the cells of the basal layer and those immediately adjacent contain numerous mitoses and a considerable amount of granular pigment. In the central portion it is thinner than normal, owing probably to the pressure of the thick overlying horny layer. In its upper and middle portions are a variable number, rarely numerous, of round, refractile bodies somewhat larger than the normal

epithelial cells, with granular protoplasm, with or without a nucleus, and frequently provided with a double-contoured wall; in the upper part of the rete, and especially in the lower portion of the horny layer, these lose their granular protoplasm and are quite transparent, with very sharply defined outlines (Fig. 165). These are the "*corps ronds*" of Darier, which were at first regarded as parasitic organisms. In the lower part of the rete, fissures of considerable size are occasionally seen, the exact significance of which is still a matter of conjecture.

The changes in the corium are comparatively insignificant. The papillæ at the borders of the lesion are greatly elongated and contain a moderate exudate of leucocytes, principally in the neighborhood of the vessels, with some granules of pigment, and those at the borders of the papule are greatly elongated.

Diagnosis.—In well-developed cases the affection is usually recognized without any difficulty. In its early stages or in mild cases it may bear some resemblance to keratosis pilaris, but differs from that affection in its regional distribution. In well-marked cases it may resemble acanthosis nigricans, affecting for the most part the same localities, but it does not, like that malady, affect the mouth, and never presents such marked pigmentation. The histological features are so characteristic that a biopsy is always of great value in the differential diagnosis.

Prognosis.—The prognosis as to recovery is very unfavorable, but the general condition is not impaired. The malady usually steadily progresses and does not yield readily to treatment, although much may be done, particularly in mild cases, to improve the condition of the skin. In a case reported by Wende, multiple epithelioma developed in some of the lesions.

Treatment.—Frequent warm alkaline baths are of great service, and, when there is much crusting, may be supplemented by the use of green soap or soaps containing sulphur or resorcin. When the skin has been freed from crusts, ointments and pastes of salicylic acid, resorcin, or sulphur, varying in strength from two to five per cent., may be used with benefit. Pyrogallol has also been recommended, but this is an extremely dirty remedy, possesses no advantage over those already mentioned, and its use is not devoid of danger. Mook, Lieberthal, and Stelwagon have observed favorable results from the use of the X-ray, and Ritter has reported a case of cure. In a mild case under the author's care a few years ago, decided improvement followed the use of this agent. Herxheimer reports the cure of two cases by the thermocautery, cauterizing superficially the affected areas.

KERATOSIS FOLLICULARIS CONTAGIOSA

Some years ago (1892) Brooke described a very rare form of follicular keratosis, apparently contagious, resembling in many of its clinical features the keratosis follicularis of White and Darier, which he regarded as identical wth the *acne sebacée cornée* of Cazenave,

the *acne cornée* of Leloir and Vidal, the ichthyosis sebacea cornea of Erasmus Wilson, and the keratosis follicularis of Morrow. Other cases have since been reported by Little, Elliot, and others.

It begins with a slight thickening of the horny layer of the epidermis, accentuating the normal lines of the skin, and in the polygonal areas thus outlined two or three small black points appear, of which one or more develop into small papules, from the summit of which firmly attached horny spines project, some of which are long and slender, others short and thick-like comedones. Some of the larger lesions become inflamed like those of acne, while others resemble warts. The eruption is symmetrically distributed and is found upon the nape of the neck, the extremities, and to a less degree the trunk and face. In Brooke's cases it reached its greatest development on the outer surface of the posterior axillary folds, where it formed thick wart-like patches from which long spines projected.

Etiology and Pathology.—While the contagiousness of the malady has not yet been definitely proven, the clinical evidence in favor of it is very strong. Out of seven children in a family under Brooke's observation, six were affected in the course of some months, and three children in a second family were attacked in the course of a few weeks. Graham Little also saw three cases in the children of one family.

The histopathology has been studied by Leloir and Vidal, by Robinson, who examined Morrow's case, by Brooke and Unna, all of whom are practically agreed as to its histological features. It is a hyperkeratosis resembling in many of its features keratosis pilaris, but, unlike that affection, the process is not limited to the hair-follicles, but also affects the interfollicular regions. While clinically it presents many of the features of a mild keratosis follicularis of the Darier type, neither Brooke nor Unna was able to find the large round bodies in the rete characteristic of that disease.

Diagnosis.—While it resembles the keratosis follicularis of Darier, the papillomatous lesions and greasiness of the skin which are present to a greater or less degree in that affection are absent; instead, the skin is usually abnormally dry.

Treatment.—Brooke found the eruption disappeared rapidly after inunctions with "mollin" (lard saponified by caustic potash, to which has been added fresh lard and a small quantity of glycerin). Sapo mollis would probably be just as effective.

KERATOSIS PALMÆ ET PLANTÆ

Synonyms.—Tylosis palmæ et plantæ; Ichthyosis palmaris et plantaris; Fr., Keratodermie palmaire et plantaire; Keratodermie symmetrique héréditaire.

Definition.—A diffuse thickening of the horny layer of the palms and soles, which may be hereditary or acquired.

Symptoms.—The hereditary form of this affection (Fig. 166), which

is decidedly uncommon, usually begins in infancy, sometimes within the first few weeks, but more commonly some months after birth, with some roughness and desquamation of the palms and soles, about the margins of which and along the lateral borders of the fingers is a narrow red or violaceous zone separating the diseased area from the sound area. After a variable time thickening of the palms and soles takes place, which, when the malady is fully developed, are covered with a horny layer which varies from a few millimetres to as much as a centimetre in thickness, is yellowish or grayish, slightly translucent or opaque, and smooth or more or less pitted. Fissuring, especially noticeable upon the palms, sometimes occurs, either in the normal furrows or independently of these, producing a mosaic-like effect; less frequently, instead of diffuse thickening, there are numerous wart-like, horny

Fig. 166.—Hereditary keratosis of the palms and soles. A younger brother and maternal uncles similarly affected.

elevations. Upon the soles the thickening may be confined to those parts especially exposed to pressure, such as the heels and the ball of the foot, while the part beneath the arch is relatively normal. While in the majority of cases the thickening is limited to the palms and soles, it occasionally extends to the dorsal surface of the fingers, over the knuckles, and the elbows and knees may be affected (Neumann). Occasionally the nails are altered; they become thick, opaque, and uneven. In many cases there is a more or less marked hyperidrosis of the palms and soles, which in the latter region produces maceration of the horny layer, which may be cast off in consequence. As a rule, the condition is a persistent one, but there may

be intermittent desquamation and at times a shedding of the horny epidermis.

Under the name *keratodermia symmetrica erythematosa*, Besnier described an acquired form of palmar and plantar keratosis, which presents a number of points of resemblance to the hereditary affection. It is distinguished by thick hyperkeratosic patches surrounded by an erythematous zone situated upon the palmar and plantar surfaces. Its

FIG. 167.—Keratosis of the soles (following eczema).

course is characterized by exacerbations, and it is worse in the winter season.

Brooke has also described as *erythema keratodes* an acquired form which resembles in some respects still more the hereditary variety. It begins with marked redness and swelling of the palms and soles, which are followed by horny thickening, and is more or less painful. It has thus far been observed only in adults, and disappears under treatment, although apt to relapse.

Diffuse hyperkeratosis of the palms and soles, sometimes very marked and extensive, is occasionally observed as a sequel of chronic eczema in these regions (Fig. 167).

An especially interesting and important variety of palmar and plantar keratosis may follow the prolonged use of arsenic internally. It usually begins with a more or less marked hyperidrosis of the palms and soles, which is followed sooner or later by hemp-seed-sized and larger horny corn-like elevations, which may be few and scattered or very numerous; in the latter case they may coalesce to form a thick, horny plate covering the entire palmar and plantar regions (in Fig. 120). As was first pointed out by Sir Jonathan Hutchinson, whose observations were later confirmed by those of the author and others, this form of keratosis may be followed by epithelioma, the number of such cases now on record being considerable.

Etiology and Pathology.—The hereditary character of the variety beginning in early life is usually well marked and has been amply confirmed by the observations of Thost, Dubreuilh, Crocker, and numerous other authors. Although usually affecting both sexes alike, it occasionally descends only in the male or female line. It has been observed in three, four, or five successive generations; Vörner has recently recorded a striking example of its hereditary character in which, out of a family consisting of forty members in four generations, forty per cent. inherited the affection.

Under the name *mal de Meleda,* Hovorka some years ago described a hereditary palmar and plantar keratosis, previously described in 1826 by Stulli, which occurs in the island of Meleda, off the coast of Dalmatia. He at first regarded it as a manifestation of lepra, but later study of the affection in conjunction with Ehlers convinced him that it was not related to that malady.

The etiological relationship of chronic eczema and of arsenic to certain of the acquired forms has already been referred to.

Pathology.—The earlier observations of Thost concerning its histopathology have been confirmed by the later ones of Unna and Vörner. The horny layer of the epidermis is greatly thickened, as well as the rete, the increase in the latter being due to a hyperplasia of the prickle-cell layer. The papillæ are greatly elongated, and the coils of the sweat-glands are hypertrophied. Unna regards these changes as indicating "a nævoid hypertrophy of the palms and soles."

Diagnosis.—Its early beginning, in infancy or childhood; the history of its occurrence in other members of the family or near relatives; the absence of symptoms of inflammation, and its limitation to the palms and soles will serve to distinguish the hereditary form from other forms of keratosis. The acquired form may be mistaken for chronic eczema and for late syphilis, but the former is markedly inflammatory and the latter is rarely so symmetrically distributed. Arsenical keratosis is seldom diffuse, but occurs as more or less discrete corn-like elevations.

Prognosis and Treatment.—The inherited variety usually persists throughout the patient's life, and, although unaccompanied by pain, itching, or other disagreeable subjective symptoms, it interferes very decidedly with the use of the hands, particularly in occupations requiring nicety of touch. The acquired forms are usually much more amenable to treatment, but the possibility of epithelioma occurring as a sequel, especially in the arsenical variety, should not be forgotten.

While some authors advise internal treatment, particularly the administration of arsenic (Brocq), this may very well be dispensed with as of more than doubtful value; the only effective treatment is local treatment. Prolonged and frequent soaking of the hands and feet in warm solutions of sodium bicarbonate or biborate, with frictions with green soap, are useful auxiliaries to other applications. The most useful local remedy is salicylic acid in ointment, or, what is much more effective, in a plaster varying in strength from 10 to 20 per cent.; this should be worn continuously for some time, renewing it every two or three days. Under such a plaster the horny epidermis is softened so that it can be rubbed or scraped off, which should be done each time before applying fresh plaster. Ormsby and others have reported more or less marked improvement after the use of the X-ray.

KERATOSIS BLENNORRHAGICA

Synonyms.—Keratodermia blennorrhagica; Fr., Keratodermie blennorrhagique; Keratose blennorrhagique.

Definition.—A keratosis, general or local, usually the latter, associated with gonorrhœa.

Symptoms.—This rare affection was first recognized by Vidal, in 1893, and a limited number of cases have since been recorded by other French observers, by Sequiera and Graham Little in England, by Baermann and Arning and Meyer-Delius in Germany, and by Simpson in the United States.

It is distinguished by elevated horny lesions, usually discrete, sometimes aggregated, varying in size from hemp-seed to a small coin, which may be disseminated over the general surface, most numerous upon the extremities, rarely upon the face and scalp, or, what is much more frequently the case, limited to the hands and feet, particularly the palms and soles. They are yellowish or brownish in color, sometimes slightly translucent, laminated, and more or less adherent to the underlying surface, which is red and somewhat moist. They appear coincidently with a gonorrhœal arthritis and may be preceded by vesicles and pustules, although this is quite exceptional. When limited to the hands and feet the palms and soles are diffusely thickened, and upon them are scattered discrete and confluent conical horny elevations, which are apt to be most abundant upon the heels, outer border of the soles, and the ball of the foot; they may also appear upon

the sides of the feet, the tops of the toes, and upon the sides and backs of the fingers. The nails are usually more or less affected; the nail-fold proliferates and the nails become opaque, thick, and elevated by an accumulation of horny material beneath them, and may be lost. There are no subjective symptoms referable to the cutaneous lesions. The duration varies with that of the gonorrhœal symptoms; when these disappear, the horny crusts fall spontaneously, leaving a slightly pink surface.

Etiology.—Although it is invariably associated with a general gonorrhœal infection, the gonococcus has not yet been demonstrated in the lesions. Chauffard and Fiessinger succeeded in producing lesions by auto-inoculation, but their attempts to reproduce them in animals failed. One attack seems to predispose to others, since when an individual has once had it, although he may have had previous attacks of gonorrhœa without the keratosis, it almost invariably recurs with subsequent infections. The patient in whom Vidal first observed the disease had two attacks coincident with two gonorrhœal infections, separated by an interval of thirty-two months.

Pathology.—The malady belongs among the hyperkeratoses. According to Arning and Meyer-Delius, Baermann, and Chauffard and Fiessinger, it begins as an inflammation characterized by a marked exudation of leucocytes, chiefly polymorphonuclears, with some "mastzellen," which surrounds the dilated vessels of the papillæ and extends into the epidermis; this is followed by a parakeratosis of the upper layers of the epidermis.

Diagnosis.—It may at times resemble to some extent syphilis or psoriasis, but its association with unmistakable symptoms of a general gonorrhœal infection, and its frequent limitation to the hands and feet, are features sufficiently characteristic to prevent mistake.

Prognosis and Treatment.—With the disappearance of the arthritis and other symptoms of gonorrhœal infection, the skin lesions likewise disappear. The treatment is that of the underlying gonorrhœal infection. Chauffard and Fiessinger recommend frequent washings with soap and water and the application of moist dressings; Simpson found ointments of sulphur and resorcin useful.

POROKERATOSIS

Synonyms.—Hyperkeratosis excentrica (Respighi); Hyperkeratose figurée centrifuge atrophiante (Ducrey and Respighi).

Definition.—A hyperkeratosis characterized by centrifugally spreading patches surrounded by a narrow horny ridge with a fine furrow on the summit.

Symptoms.—First recognized by Majocchi, this affection was described simultaneously by Mibelli and Respighi in 1893, the former calling it porokeratosis, the latter hyperkeratosis excentrica. It begins as one or more dirty-brown horny papules, which slowly enlarge peripherally to form round, oval, or irregularly shaped, sharply cir-

cumscribed patches surrounded by a narrow horny ridge, the summit of which is divided longitudinally by a linear furrow, along the bottom of which usually extends a fine thread-like corneous elevation. The central portion of the patches may be atrophic and rather smooth or slightly desquamating and somewhat depressed; or it may be thickened and contain a number of small horny papules similar to the primary ones. In hairy regions the patches usually, but not invariably, become more or less bald. They vary in size from a small pea to a coin, but exceptionally may cover a considerable area, as in the case described by Mibelli, in which the outer side of the forearm and back of the hand to the knuckles were covered by a single patch with serpiginous borders. They are round, oval, or polycyclic in shape, may be solitary or multiple, and occasionally exist in considerable numbers. The regions affected by preference are the dorsal surfaces of the hands and feet, but the face, arms, legs, and genitalia may likewise be affected.

The horny ridge which forms the margin of the patches, with the furrow running along its summit, is one of the most characteristic features of the malady and is peculiar to it. It usually rises quite abruptly on the side towards the sound skin and frequently contains numerous minute horny elevations. It is, as a rule, continuous, but is at times broken, especially in the cases in which the patches are irregular or polycyclic in shape; and in a few instances two or more concentric ridges or crescents have been observed. Occasionally it happens, more frequently in the face than elsewhere, that instead of a continuous ridge the patches are surrounded by numerous brownish, miliary conical or hemispherical horny elevations arranged linearly instead of a continuous ridge.

When the disease is seated upon the hands, the nails may also be involved; they become thick, uneven, and opaque.

According to Ducrey and Respighi, lesions similar to those upon the skin are fairly common upon the mucous membranes of the mouth. In this situation they occur as whitish or opalescent patches, round or oval, with a white elevated border.

The progress of the affection is usually very slow; new patches may appear from time to time, while the old ones enlarge very gradually and may remain for months without perceptible change.

Etiology and Pathology.—That heredity is an important factor in its production may be inferred from the relatively considerable number of instances in which two or more cases have been observed in the same family. Mibelli, Ducrey and Respighi, and Gilchrist have recorded examples, the last-named reporting the occurrence of no less than eleven cases in four generations. It occurs at all ages, but is most common in adolescents and young adults; it is somewhat more frequent in males than in females.

All attempts to demonstrate a causative organism in the lesions have thus far failed. Wende, after numerous failures, succeeded in

producing by inoculation, in an individual who already had the malady, a lesion which he believed to be the early stage of the disease.

All those who have studied the histopathology of the malady, and that includes almost all those who have reported cases, are in practical agreement as to its histology. It is a hyperkeratosis beginning in the lower portion of the corneous layer and upper portion of the rete, reaching its greatest development in the ridge which surrounds the patches, especially in the neighborhood of the mouths of the sweat-ducts, which are frequently filled with a plug of horny epithelium. Mibelli thought it confined to the sweat-pore and for that reason gave it the name porokeratosis, but this has been shown by other observers to be erroneous, the follicles also being invaded. In the centre of the patches the rete shows varying degrees of atrophy. In the derma the blood- and lymphatic-vessels are dilated, and the former are surrounded by an exudation of leucocytes. The coils of the sweat-glands and the ducts are at times dilated, at others atrophied. In the patches on the mucous membranes there are much more decided evidences of inflammation in the papillary and subpapillary portions (Ducrey and Respighi).

Diagnosis.—The diagnostic features of the affection are the circular or oval shape of the patches; their situation upon the face, hands, legs, and feet, and the peculiar ridge which surrounds them; nothing like the last is seen in any other disease.

Prognosis and Treatment.—It usually pursues a slowly progressive course and rarely disappears, although Mibelli has recorded an instance in which the patches underwent involution.

No local application has thus far proved of any avail in the treatment. Gilchrist curetted a number of patches in the cases under his observation, but they all returned; in two cases, however, electrolysis was used with excellent results. Small patches may be excised.

ANGIOKERATOMA

Synonyms.—Lymphangiectasis (Colcott Fox); Fr., Verrues telangiectasiques (Dubreuilh); Ger., Angiokeratom.

Definition.—An affection characterized by small vascular and horny elevations situated for the most part upon the extremities.

This rare malady was first recognized by Cottle, who, according to Crocker, reported an example of it in the St. George's Hospital Reports for 1877–'78, but the name by which it is at present most appropriately known was given to it by Mibelli in 1889.

Symptoms.—It begins as small, red, violaceous, or slate-colored, non-elevated discrete spots, at times quite numerous, with a darker central punctum, situated upon the dorsal surface of the hands and feet, particularly the backs of the fingers and toes, which at first lose their red color, wholly or in part, under pressure. After a time these spots become more or less elevated, slightly hard and rough like ordinary warts, but still retaining their red or violaceous color, which can

no longer be made to disappear by pressure. Many of them contain minute black points, which can be picked out with a needle, which are small coagula situated between the cells of the horny layer of the epidermis. New lesions appear from time to time, especially during the winter season, at which time the old ones become more noticeable. In most of the cases the patients suffer from chilblains. There are no subjective symptoms. While the affection is in most cases limited to the extremities, it has been observed in other regions, such as the scrotum; Anderson observed one in which the entire surface except the face, palms, and soles exhibited innumerable lesions, and Stümpke has recently reported one in which the thighs, scrotum, penis, abdomen, and upper extremities were affected. In a number of instances other vascular lesions were present; in a case reported by Zeisler there were nævus-like patches and vascular tumors on the ears, arms, and legs.

Etiology and Pathology.—Nearly all the reported cases occurred in children and adolescents, but exceptionally it may begin at a much more advanced age, as in the cases of Fordyce and Zeisler. It is apparently but little influenced by sex, although somewhat more frequent in males than in females. As already noted, it occurs for the most part in those subject to frost-bite. In a considerable number of cases it exhibited a familial character; Mibelli saw it in six children of one family, Pringle in four, Dubreuilh observed it in a mother and daughter, and Hartigan in two sisters, so that it is probable that it is to a considerable degree dependent upon heredity. In a small proportion of cases it has been associated with evidences of tuberculosis.

As to its histopathology, it is a telangiectasis plus a hyperkeratosis. The vessels of the papillæ are widely dilated, forming irregular spaces, at times divided by slender fibrous septa, filled with blood and coagula, which extend upward into the rete. The horny layer is much increased in thickness, and the granular layer is likewise broadened. There is a moderate acanthosis, the interpapillary prolongations of the rete being elongated and at times branched. Sutton found notable changes in the elastic tissue. The theory that it is related to tuberculosis finds no support in its histology.

Diagnosis.—The only affections for which it is likely to be mistaken are small angiomata or telangiectases and warts. It differs from the former by the more or less marked horny character of the lesions, and from the latter by the very evident vascular alterations as indicated by their red or purplish color, which in the early lesions may be made to disappear by pressure.

Prognosis and Treatment.—Left to itself, the malady lasts indefinitely, and new lesions appear at irregular intervals. As it is unaccompanied by annoying symptoms, it is frequently discovered only by accident, and often exists without coming under the physician's observation.

The most convenient, and at the same time most effective, treatment is electrolysis. The needle attached to the negative pole should be inserted in each lesion and a current of two to three milliampères allowed to act for twenty to thirty seconds. They may also be quickly destroyed by the galvanocautery, employing one with a fine point.

ACANTHOSIS NIGRICANS

Synonyms.—Keratosis nigricans; Fr. Dystrophie papillaire et pigmentaire (Darier).

Definition.—A rare disease of the skin characterized by pigmentation and papillary hypertrophy, exhibiting a marked predilection for certain regions and associated in a large proportion of cases with malignant disease of some one of the abdominal viscera.

Symptoms.—This rare and remarkable disease was first described by Pollitzer and Janovsky independently, in 1890, who gave it the name suggested by Unna, *acanthosis nigricans.* Three years later Darier reported three new cases under the name *dystrophie papillaire et pigmentaire,* and called attention to its relationship to abdominal cancer. Up to the present time about sixty cases have been reported by various observers in Europe and America. It usually begins as a brownish or dirty-gray discoloration of the neck, the axillæ, the genitocrural, and perianal regions, which later spreads to other parts, such as the breasts, the umbilical region, the flexures of the elbow, the popliteal spaces, the forearms, and the back of the hands, the parts around the mouth and the eyes. Soon after the appearance of this discoloration, or concurrently with it, the skin in these regions becomes thick, its normal furrows more or less exaggerated, and warty and papillomatous growths appear, the latter especially in the axillæ, in the groins, about the genitalia and anus, and in the mouth. Numerous warty lesions occupy the backs of the hands, while the palms are diffusely thickened and horny. In a few instances small papillomata were present on the edges of the lids and in the canthi, where they formed small confluent patches; in others the auditory meati were filled with warty growths. The buccal, lingual, and pharnygeal mucous membranes likewise exhibit more or less papillary hypertrophy; the tongue, the hard and soft palate, the gums, and the inner surface of the lips are covered with numerous soft papillomatous growths, some of which resemble condylomata. In Pollitzer's case these growths formed considerable blackish masses at the labial commissures. In exceptional instances the laryngeal and nasal mucous membranes have been invaded. While the mucous membranes share in the papillary hypertrophy, pigmentation is rarely present; very recently Toyama has reported a Japanese case in which there were patches of pigment upon the hard palate and upon the conjunctiva. With the progress of the malady the skin generally becomes dry, the nails brittle, and the hair falls. The affection usually advances rapidly, reaching its full development in the course of two or three months.

In some instances it began with more or less severe itching; in a case reported by Crocker it began with an outbreak of what appeared to be ordinary warts on the backs of the hands.

The course of the disease is usually steadily progressive, and a fatal termination occurs at the end of one or two years, usually with symptoms indicative of malignant disease.

In children and adolescents the symptoms are usually much less marked, and, when once developed, the malady may in these exhibit but little change for years, the general health being but little, if at all, affected.

Etiology.—The disease has been observed at all ages from two years to seventy-two, but at least two-thirds of all the reported cases occurred after thirty years of age. Sex seems to exert but little influence upon its occurrence, but the number of female cases is slightly in excess of the male cases. In a very large proportion of adult cases, eighty per cent., according to Pollitzer, it has been associated with abdominal cancer, a proportion so large as to indicate some causal relationship between the two affections. Spietschka has reported a case strikingly confirmatory of this relationship. A young woman, twenty years of age, who presented the symptoms of acanthosis nigricans, also suffered from a malignant deciduoma for which a total hysterectomy was done; four and one-half months after the removal of the uterus, all evidence of the cutaneous disease had disappeared.

Pathology.—Nothing definite is known about the pathogenesis of the affection. Darier thinks it likely that the changes in the skin are the result of some irritant effect produced upon the abdominal sympathetic by a malignant growth affecting some one of the abdominal organs; in the juvenile form the same changes may result from a benign growth.

Marked histological changes are present in the epidermis and corium. The former shows varying degrees of hyperkeratosis with a decided acanthosis, and the cells of the rete, both the upper and basal cells, contain an abundance of brown pigment. The papillæ of the corium are greatly elongated, sometimes branched, and contain a variable number of fusiform and branched cells filled with pigment, together with considerable numbers of "mastzellen."

Diagnosis.—The cardinal symptoms are pigmentation and papillary hypertrophy; these, taken together with the marked symmetrical regional arrangement, are so characteristic in well-developed cases as to be almost pathognomonic. The diseases from which it is to be distinguished are Darier's disease (keratosis follicularis), seborrhœa nigricans, ichthyosis, Addison's disease, arsenical pigmentation, and xeroderma pigmentosum; from all of these it differs by its remarkable predilection for the regions already enumerated and by its symmetrical distribution. The association of the symptoms with a demonstrable abdominal tumor would, of course, be still more significant.

Prognosis.—In adult cases the prognosis is very unfavorable, death

occurring usually within a year or two after the appearance of the first symptoms. In juvenile cases, however, the outlook is much more favorable; the disease may last for years in children without materially affecting the general health.

Treatment.—But little can be done to remove the disease or stay its progress. In White's case, a juvenile one, considerable improvement seemed to follow the administration of thyroid, but the improvement was not permanent. Locally, ointments and plasters containing salicylic acid are sometimes of use in lessening the papillary growths. When these are large and a source of inconvenience they may be removed by excision or by the galvanocautery.

ICHTHYOSIS

Synonyms.—Ichthyosis vera; Xeroderma; Xeroderma ichthyoides; Fish-skin disease; Fr., Ichthyose, Ichtyose; Ger., Fischschuppenausschlag.

Definition.—A congenital affection of the skin, characterized by dryness and varying degrees of scaliness.

Symptoms.—It presents considerable variation in its appearance and in the degree of its development, and has been divided by authors into a number of varieties, the most generally recognized of which are: *Ichthyosis simplex, ichthyosis hystrix, ichthyosis congenita.*

Ichthoysis simplex in its mildest form, known also as xeroderma, occurs as dryness of the skin, accompanied by moderate, fine, branny scaling, most noticeable upon the extensor surfaces of the arms and legs, with an exaggeration of the normal lines about the elbows and knees, owing to slight thickening (Fig. 168). On the outer side of the upper arms and thighs the follicles frequently contain small horny spines, which, projecting above the surface, give the skin a coarse, rasp-like appearance and feel (keratosis pilaris, lichen pilaris). The skin of the trunk, while harsh and dry, scales but little. The skin in the flexures of the elbows, in the popliteal spaces, and in the axillæ is unaffected and presents its usual softness and smoothness. The disease is much more noticeable in winter than in summer; indeed, in the latter season the skin may show but little or nothing. The skin of such individuals is usually very susceptible to cold and readily becomes inflamed, so that eczema is a common complication.

In more marked cases the skin everywhere is quite scaly and the extremities are covered with an abundance of white or grayish scales which upon the legs are quite large, polygonal or lozenge-shaped, and separated by shallow fissures which produce a crackled or tessellated appearance, oftentimes very noticeable (Fig. 169). These scales are adherent by their central portion, while the edges are loose and frequently turned up; at times they present a certain degree of translucency with a slight lustre (*ichthyosis nitida ichthyose nacrée*); at others they are of a dull dirty-gray. Over the knees and elbows the skin is decidedly thickened and arranged as transverse horny ridges which

are often greenish or blackish in color. In these cases, as in the milder ones, eczematous inflammation is rather frequent in the winter season.

In the severest forms the scaling occurs as epidermic plates of varying size and thickness, polygonal or lozenge-shaped, especially marked on the extremities, producing an appearance like the skin of a serpent (*ichthyosis serpentina*), or, when the plates are quite thick, like that of an alligator ("alligator men"), in the most highly

FIG. 168.—Ichthyosis simplex.

developed cases interfering with the flexibility of the joints. The scales are often greenish or black (*ichthyosis nigricans, nigra*) owing to the accumulation of extraneous matter and to increased pigmentation. Even in these advanced cases the flexures of the joints and the axillæ are usually but little affected.

In the mild cases the face is usually but little involved; in the severer ones, however, there is often more or less scaling, which is much more noticeable in the winter and apt to be accompanied by

varying degrees of eczematous inflammation; quite exceptionally there may be a certain degree of ectropion from dryness and contraction of the skin (Crocker).

FIG. 169.—Ichthyosis.

The scalp is covered with an abundance of fine white scales and in old cases of the severe type the hair is dry and lustreless and may be somewhat thinned.

The secretion of sweat and sebum, especially the former, is suppressed or greatly diminished.

Ichthyosis Hystrix.—This variety differs so much from the preceding one that a considerable number of authors deny its relationship to it. It is characterized by a variable number of circumscribed patches of horny or wart-like elevations and spines, the latter sometimes of considerable length (hedge-hog skin; "porcupine men"), either alone or associated with a general dryness and scaliness of the skin, such as are present in the simple type. The extent of these patches varies a good deal; in exceptional cases they may cover a considerable part of the body. The variety described by authors as *ichthyosis hystrix linearis* is not an ichthyosis, but a linear nævus (*nævus unius lateris*).

Ichthyosis Follicularis.—Under this name MacLeod has reported three cases of an affection characterized by numerous follicular spines, most abundant on the back, sides of the neck, and extensor aspect of the upper arms, associated with total loss of the hair of the scalp, brows, and lashes. The palms and soles were unaffected, but the entire skin was dry and covered with fine scales.

The exact place of these cases, as well as of other aberrant forms, such as the case reported by Thibierge, in which the mucous membranes of the mouth and nose were affected, and those of Jadassohn, Hallopeau, and Jeanselme, in which atrophy of the skin was present, is still a matter of considerable uncertainty. Certain local forms of hyperkeratosis which have been placed among the ichthyoses, such as ichthyosis palmæ et plantæ, are probably not related to ichthyosis at all, but should be placed among the hyperkeratoses (*vid.* Keratosis palmaris et plantaris hereditaria).

Ichthyosis Congenita.—Synonyms.—Harlequins fœtus; Ichthyosis sebacea, Hebra.

In this rare affection the infant, which is frequently prematurely born, is covered at birth with thick, somewhat greasy epidermic plates separated by extensive fissures which extend down to the corium. The movements of the lids and the lips are greatly restricted by these epidermic scales, so that the eyes are frequently opened with difficulty and nursing is interfered with. The ears and nose are more or less deformed and atrophied by the pressure of the crusts. The infants are either still-born or die soon after birth, through inability to nurse; the milder cases may survive for some weeks.

Etiology.—Ichthyosis affects both sexes alike. In the vast majority of cases it is congenital, although it does not as a rule appear before the end of the first year, and in many cases the influence of heredity is demonstrable. Like other inherited affections, it may be confined to one or the other sex and may skip a generation, to reappear in subsequent ones. Kaposi records the case of an ichthyotic woman whose five sons were also ichthyotic, while her three daughters were unaffected. An endemic form has been described by a

number of authors as occurring in the East Indian Archipelago and some of the islands of the Pacific; it has been attributed by some to drinking "kava-kava," a fermented liquor made from the *Piper methysticum*; by others to frequent intermarriage; but the real nature of the affection is still somewhat doubtful; it is not at all certain that it is ichthyosis.

Pathology.—Leloir, basing his conclusions upon a histological study of two cases, was of the opinion that ichthyosis is a trophic affection dependent upon degenerative changes in the cutaneous filaments of the peripheral nerves and in the posterior roots of the spinal nerves, but his findings have not been confirmed by other observers. Unna regards it as an "infectious hyperkeratosis tending to parakeratosis"; Tommasoli believes the changes to be the result of a mild chronic inflammation.

In the mild forms the horny layer of the epidermis is increased in thickness and its cells are without nuclei; the granular layer is completely absent and the Malpighian layer somewhat atrophied, its cells smaller and the intercellular spaces narrower than normal. A small amount of yellow granular pigment is present in the lower cells of the rete. The papillæ of the corium are somewhat flattened and there are small collections of cells in the vicinity of the vessels. In the more advanced cases the hyperkeratosis is still greater, in ichthyosis hystrix reaching enormous proportions, and the horny layer in places penetrates the somewhat thickened rete. The granular layer is present and well developed. There is a moderate cellular exudate along the vessels of the derma, with occasional accumulations of plasma cells and an increased number of "mastzellen" (Unna). In old cases the collagenous tissue of the corium is thickened and the coils of the sweat-glands are dilated and their lining epithelium swollen.

The changes found in ichthyosis congenita, as in the ordinary form, consist essentially of hypertrophy of the stratum corneum. Riecke especially emphasizes the marked cornification of the hair-follicles and the inclusions found in the hypertrophied corneous layer which he regards as snared-off parts of the derma. Bowen is of the opinion that this variety is due to the persistence of the embryonic epitrichial layer.

Diagnosis.—Its early appearance, usually in the first or second year of life; the dryness and scaliness of the skin, worse in cold weather and usually accompanied by symptoms of inflammation; the polygonal or lozenge shape of the scales, in the more advanced cases producing a tessellated appearance, especially upon the legs, are features so characteristic that it is readily differentiated from other scaly affections. In the not infrequent cases in which an eczematous condition is superadded to the ordinary symptoms, it may be mistaken for eczema, but an examination of the skin will show a generalized scaling on parts not inflamed.

Prognosis.—The affection when once established usually continues for the remainder of the patient's life, but it does not affect his general health in any way. As already noted ichthyotic subjects are especially liable to eczematous inflammation of the skin, particularly in the winter season. While a cure is not to be expected, much can be done to relieve the condition by appropriate hygienic and therapeutic measures.

Treatment.—Although the most efficient treatment for ichthyosis is external, there are a few internal remedies which exert a temporary beneficial effect upon the skin. Pilocarpine by its stimulating effect upon the sweat-glands tends to keep the skin soft and pliable. Thyroid gland has been found useful by a number of authors; in a case recently under the author's care very decided improvement was experienced while the patient was taking it.

Frequent baths are of great use in all forms of the disease, and combined with the inunction of bland ointments, such as cold-cream or cold-cream and lanolin in varying proportions, are often sufficient in mild cases to keep the skin soft and free from scales. One of the most efficient ointment bases is *eucerin*, a derivative of wool-fat introduced by Unna; the author has found this far superior to all others.

In the marked cases, warm alkaline baths followed by a salicylic acid ointment, two to five per cent., using either lanolin and cold-cream or preferably eucerin as a base, will be found more or less effective, but these must be continued methodically if the skin is to be kept smooth. In the severest types prolonged immersion in warm alkaline baths, and the use of an alkaline soap, such as the sapo viridis, are often necessary to remove the thick accumulation of horny scales. In such cases steam or vapor baths are extremely useful. In cases of the hystrix type, plasters and ointments containing from five to ten per cent. of salicylic acid may be applied continuously for several days to remove the thick scales. Stelwagon finds the addition of resorcin to such ointments and plasters, 3 to 10 per cent., increases their effectiveness, or resorcin may be used as an ointment of 5 to 20 per cent. strength, as recommended by Andeer. Anderson has suggested the wearing of rubber undergarments in obstinate cases for the purpose of macerating the adherent scales.

VERRUCA

Synonyms.—Wart; Fr., Verrue; Ger., Warze.

Definition.—An epidermic and papillary benign new-growth.

Symptoms.—Three varieties of wart are recognized: Verruca vulgaris, verruca plana juvenilis, and verruca senilis.

Verruca Vulgaris.—The most frequent variety, assumes a number of forms. It occurs as pin-head to pea-sized and larger hemispherical or conical elevations usually sessile, but sometimes pedunculated, with a finely or coarsely granular horny surface. At first the color of the normal skin, they become a dirty-gray, brownish, or blackish as they

grow older, and as they increase in size the surface is frequently divided by fissures which give them the appearance of small papillomata. This form is seen most commonly upon the backs of the hands in children either as a solitary lesion or, what is far more frequent, as irregular groups or patches, sometimes confluent, containing from three or four to a dozen or more. They may also occur on other parts, such as the face and scalp, but are rare upon the trunk; they are also seen in adults, but much less frequently than in children. As was pointed out by Vidal, they are apt to begin with a single lesion, the "mother wart," around which a number of others appear later. Not infrequently they are situated along the lateral borders of one or more nails, or beneath the free border, particularly in adults, where they

FIG. 170.—Verrucæ digitatæ.

give rise to considerable disfigurement and much discomfort. Quite exceptionally they have been noted upon the mucous membrane of the lips (Eliot).

When situated upon the palms and soles, they present an appearance somewhat different from the foregoing. In the latter region they occur as pea-sized and larger flat fissured elevations in the centre of a callosity, and are often mistaken for corns or callosities. The most frequent sites are parts especially exposed to pressure, such as the base of the great toe and the heel, and they are commonly the source of much pain and discomfort, interfering seriously with walking.

Warts frequently occur upon the scalp, where they are apt to occur as small growths covered with slender, often rather soft papillæ (verruca digitata). Although such digitate lesions are more frequent in the scalp than upon other parts, they may also occur upon the hands and face (Fig. 170).

Occasionally there may be but one or two slender thread-like growths situated upon some portion of the face, sometimes upon the edge of an eye-lid, from 3 to 4 mm. long or longer (verruca filiformis).

Verruca Plana Juvenilis.—This differs considerably in its appearance from the foregoing. The lesions are usually numerous, quite flat, with very little elevation, whitish or pinkish in color, with smooth or finely granular surface. Not infrequently a number of them are angular or irregular in outline and resemble more or less the papules of lichen planus. They vary in diameter from 2 to 3 mm. to 1 cm. or more, may be discrete

Fig. 171.—Verrucæ planæ.

or partly confluent, forming irregular patches of varying extent. They are situated most frequently upon the backs of the hands and upon the face, less commonly upon the palms and in the scalp, and exceptionally upon the legs and genitalia (Gemy, Dubreuilh). They are seen usually in children and adolescents, but are by no means uncommon in older subjects (Fig. 171).

Verruca Senilis.—Synonyms.—Verruca plana seniorum; Verruca seborrhoica; Senile wart. This is found, as a rule, as its name indicates, in elderly individuals. It occurs as round, flat, yellowish, brownish, or blackish elevations varying in diameter from 2 to 3 mm. to 1 to 2 cm.,

covered with a friable greasy scale or crust, beneath which is a somewhat granular or papillomatous surface. It is situated most frequently upon the upper part of the back, less commonly upon the upper chest, upper arms, and the face, and is often present in considerable numbers. It is often associated with evidences of senile degeneration of the skin, and may be accompanied by considerable itching.

Etiology.—Childhood and adolescence are active predisposing factors in both verruca vulgaris and verruca plana; as already remarked, they are much more frequently met with at these periods than in adult age. Warts have long been regarded as contagious, and there is considerable clinical evidence in support of this opinion, such as accidental inoculation (Payne), and occurrence in several members of the same family. Recently successful inoculation experiments carried out by Jadassohn and others have established the infectious nature of these growths. Crocker and others regard the plantar wart as the result of traumatism from wearing ill-fitting shoes, etc., but these only serve in all probability as predisposing causes.

Pathology.—All the layers of the epidermis are more or less increased in thickness: there is hyperkeratosis, sometimes with more or less parakeratosis; the granular layer is increased in breadth and unusually well defined; there is a decided acanthosis, the rete cells being enlarged and the intercellular spaces widened, with numerous mitoses in the cells of the basal layer and those immediately adjacent. The papillæ of the corium are greatly increased in length, but otherwise show but little change; occasionally there are evidences of inflammation in the shape of a moderate round-cell exudate in the neighborhood of the vessels. These changes vary according to the type of lesion; in some the hyperkeratosis, in others the acanthosis, in still others the papillary hypertrophy predominates. There is some difference of opinion as to whether the changes in the rete or those in the papillary layer are the primary ones.

In the senile or seborrhœic wart, according to Pollitzer, there is a slight increase in the thickness of the horny layer, some hypertrophy of the rete, and groups and lines of epithelioid cells in the papillary and subpapillary portions of the corium. There is likewise a peculiar fatty infiltration of the epithelium of the coil-glands, of the papillary and subpapillary layers of the corium, and of the cells of the rete. This last finding, however, Dubreuilh was unable to confirm. The presence of epithelioid cells in the papillæ and their peculiar arrangement lead Pollitzer to place these growths among the nævi.

Diagnosis.—The common wart, verruca vulgaris, such as occurs so commonly upon the hands and in the scalp, is usually readily recognized. When situated upon the sole, they are frequently mistaken for corns or callosities, but a careful examination will soon disclose their true character. The plane wart, as already noted, may be mistaken at times for the papules of lichen planus, but the violaceous color, the flat shining top which characterize the latter, are absent. They may

at times be confounded with the little tumors of epithelioma (molluscum) contagiosum, but they never present the small central opening found in such growths.

Prognosis.—Warts are altogether benign growths, although in exceptional cases they may, when subjected to long-continued irritation, undergo epitheliomatous degeneration. The common wart often pursues a most erratic course, particularly in children; after lasting many months, it may quite suddenly disappear, leaving no trace of its existence. In adults they may continue to enlarge for a time and then remain unchanged indefinitely. The senile variety, when once developed, may last for years, showing no tendency to spontaneous disappearance. Occasionally they become epitheliomatous; Dubreuilh, however, asserts that this is incorrect, the error arising through confounding them with senile keratosis.

Treatment.—A number of internal remedies have been recommended at various times as exerting some curative effect. A number of authors have testified to the beneficial effect of arsenic in both the common and plane varieties, and there seems to be but little doubt that this remedy does exert some influence upon them. Herxheimer, however, asserts that it is useful only in the plane wart and uses this as an argument for separating this variety from the common form. Colrat asserted that magnesium sulphate given internally caused their disappearance, and Crocker confirmed this statement, but other observers, among whom may be included the author, have found it altogether without effect. Quite recently White has reported the disappearance of plane warts after the internal use of protiodide of mercury given in doses of one-quarter of a grain (0.016) three times a day. In view, however, of the frequent spontaneous disappearance of these growths, it is very difficult to determine the real value of any internal treatment without a very large experience with it.

Warts of the common type may be removed by the use of caustics, such as glacial acetic acid, trichloracetic acid, or chromic acid; or they may be destroyed by freezing with solid carbon dioxide, when not too large. Lesions of moderate size may be very conveniently and readily removed by electrolysis. The base of the growth should be transfixed in several directions by a needle attached to the negative pole, using a current strength of about five milliampères. About the nails they are frequently most troublesome, but may be readily removed by the curette, first freezing them with ethyl chloride and afterward cauterizing the base with trichloracetic acid to prevent recurrence, which is very apt to happen unless this is done. Small flat growths may be removed by repeated painting with a solution of salicylic acid in collodion, ten to twenty per cent.; the softened epithelium should be thoroughly rubbed off each time before making a fresh application, which should be done every second or third day.

The plantar wart is often most resistant to treatment. The continuous application of a 10 to 20 per cent. salicylic-acid plaster will often

eventually cause their disappearance, but in the larger and deep-seated lesions it frequently fails. If not too large nor too deep-seated, they may be destroyed by freezing with the carbon dioxide "snow"; or they may be frozen and curetted out, cauterizing the wound with nitrate of silver or trichloracetic acid. They may be very speedily destroyed by the high-frequency spark, this being especially applicable to the larger lesions. The filiform warts should be cut off with curved scissors, and the wound cauterized.

When the lesions are so numerous and so widely distributed as to preclude any of the foregoing measures, ointments of sulphur or salicylic acid either alone or combined, 2 to 3 per cent. of each, may be applied twice a day, although very prompt results are hardly to be expected from this treatment. Radiotherapy is much more promising in such cases, and should be tried, especially in the plane and senile varieties.

CONDYLOMA ACUMINATUM

Synonyms.—Verruca acuminata; Venereal wart; Moist wart; Fr., Condylome acuminé; Ger., Spitzencondylom, Spitzenwartze.

Definition.—A benign epithelial new-growth of wart-like appearance, situated chiefly, but not exclusively, upon the genitalia and neighboring parts.

Symptoms.—Although these growths are closely related to and resemble the ordinary warts in many respects, they differ from them considerably both clinically and histologically.

They occur as small elevations with a granular surface, or as tufted and lobulated, sessile or pedunculated tumors of variable dimensions. Upon mucous surfaces they are pink or red, moist, or, when macerated, as is frequently the case, a dirty-gray or yellowish, covered with an abundant muco-purulent secretion with a most offensive odor, which sometimes dries sufficiently to form a thick yellowish or brownish crust. Upon cutaneous surfaces they are dry and the color of the skin, or when in regions where they are exposed to heat and friction they are covered with a grayish or yellowish moist coating. They frequently grow quite rapidly and may reach the size of a walnut or an egg. The seats of election are the genitalia, less frequently the perineum and anus, but they may also be found upon parts more or less remote from these, as the umbilicus, the axillæ, between the toes, and in and about the mouth. Upon the penis a common, perhaps the most frequent, site is the furrow behind the corona glandis, where they may be so numerous as to form an almost continuous ring; they are also common about the frenum and on the inner surface of the prepuce; less frequently they are situated on the perineum and around the anus. In women they occur upon all parts of the genitalia, but especially upon the labia minora and at the introitus vaginæ; the perineum and the anus are much more frequently affected than in men, the lesions in this region usually following those upon the genitalia.

Etiology.—Although there is but little doubt that these growths are the result of some infection, the infecting agent is not yet known. In much the largest proportion of cases they are associated with some irritating discharge, and are commonly seen in those suffering from gonorrhœa, hence the name venereal wart, by which they are commonly known.

Pathology.—According to Unna, the pointed condyloma is a pure acanthoma, and differs from the ordinary wart by the complete absence of hyperkeratosis; indeed, the horny layer is not infrequently thinner than normal. The rete is markedly hypertrophied, its cells being several times the normal size and containing numerous mitoses, not only in the basal layer but in the layers above it; the interpapillary spaces are much wider than normal and the intercellular fibres, or prickles, are unusually well developed. The papillæ are greatly increased in length and are frequently branched; their blood-vessels and lymph-spaces are dilated to a marked degree, the connective-tissue cells are increased in numbers, and there is a more or less considerable exudation of leucocytes with plasma-cells and a considerable number of "mastzellen."

Diagnosis.—Their appearance and situation upon the genitalia are so characteristic that they are not likely to be mistaken for other growths. They are to be distinguished chiefly from the syphilitic flat condylomata, but the latter are usually associated with other syphilitic lesions such as cutaneous eruptions and mucous patches.

Prognosis.—The pointed condylomata are quite benign growths, but are often the source of much annoyance and frequently cause the patient great disquietude, as they are commonly mistaken for syphilitic lesions. Although at times resistant to treatment, they are curable, but recurrences are common.

Treatment.—Cleanliness is of the first importance and is best maintained by the frequent and liberal application of some mild antiseptic solution, such as a saturated solution of boric acid, weak solutions of carbolic acid, bichloride of mercury, or permanganate of potash, this last being one of the most effective. Small lesions may be made to disappear by the daily application of liquor ferri chloridi or powdered alum. One of the most effective applications is resorcin (Joseph, Riecke) which should be dusted on the lesions two or three times daily until a slough forms, which usually requires three or four days; they should then be dusted with some drying powder, such as equal parts of boric acid and subgallate of bismuth, until the eschar falls. For the larger lesions Joseph recommends the application of formalin, first cocainizing them, since the application is quite painful. Large growths may be excised, but, as they are usually very vascular, bleeding is apt to be profuse, and for this reason the thermocautery is preferable to excision.

SCLERODERMA

Synonyms.—Sclerema; Scleriasis; Scleroma adultorum; Ger., Sklerodermie; Fr., Sclerodermie; Sclérème des adultes.

Definition.—A chronic disease characterized by a peculiar leathery induration of the skin, occurring diffusely or in patches.

Diffuse Scleroderma.—The diffuse form may begin acutely or may appear so gradually that the patient cannot fix definitely the time of its beginning. Pronounced or characteristic prodromal symptoms are usually absent, but ill-defined muscular and arthritic pains, neuralgia or paræsthesia, may precede for a variable time the appearance of the cutaneous symptoms. At first there is slight stiffness of the skin with some œdema, the skin pitting slightly on firm pressure, the œdema being most pronounced in the cases which begin acutely, although it is probably present to some degree in most, if not all, cases in the earliest stages. The induration, which is always symmetrically distributed, usually spreads slowly, sometimes rapidly, until considerable areas may be involved, such as the entire face, the whole of a limb—both arms or both legs—or a large part of the skin of the trunk. When fully developed the skin is hard and leather-like to the touch and bound down to the underlying tissues so that it can no longer be picked up between the fingers. In the early stages the color may be but little changed, but later it is usually whitish or yellowish-white like old ivory, and in the final stages is frequently irregularly pigmented.

While no portion of the skin is entirely exempt, the palms and soles are rarely attacked; the face, neck, upper extremities, and upper half of the trunk are the regions most frequently affected. When the face is attacked, it presents a mask-like appearance, owing to the immobility of the facial muscles produced by the induration of the overlying skin. The nose is shrunken and pointed, the lips thin, and the mouth narrowed, so much so in advanced cases that it is opened with some difficulty; the eyes are staring or only partly opened, owing to the stiffness and induration of the upper lids. When considerable areas over the thorax are affected, the respiratory movements may be considerably interfered with. Occurring about the joints, it interferes more or less with their movements and may lead to more or less complete ankylosis. When the hands are affected, the fingers become thin and pointed, are partly flexed, and are moved with difficulty, a condition to which the name *sclerodactylia* has been applied. In a certain number of cases the disease begins in this region with the symptoms of Raynaud's disease, such as cyanosis of the fingers followed by extreme local ischæmia and ulceration.

Exceptionally it has been observed to attack the mucous membranes of the mouth, pharynx, larynx, and vagina, which exhibit an induration similar to that seen in the skin.

Constitutional symptoms are absent, as a rule, but in the cases which begin acutely with pronounced œdema of the skin there may

be chills and elevation of temperature, which precede or accompany the early stages.

Subjective symptoms may be altogether absent, but there is usually a pronounced feeling of stiffness or tension, and sometimes itching, but rarely enough to occasion any considerable amount of annoyance. The sense of touch is usually unchanged, but there may be varying degrees of hyperæsthesia or anæsthesia.

The course of the malady is a chronic one, but its duration varies within considerable limits. After reaching a considerable development it may show but little change for months or years and then retrogress slowly until complete recovery has taken place. Or it may exhibit irregular periods of retrogression and exacerbation, new areas becoming involved during the latter, before recovery is eventually established. Not uncommonly it pursues a steadily progressive course; the skin becomes extremely atrophied and adherent to the underlying connective tissue and muscles which also undergo atrophy; fibrous ankylosis of the joints, particularly of the smaller ones, occur; and ulceration over bony prominences and parts subjected to pressure or friction is not uncommon. In long-standing and widespread cases which pursue such a course the patient may die from exhaustion or fall an easy victim to some intercurrent affection.

Circumscribed Scleroderma.—Synonyms.—Morphœa; Keloid of Addison (Plate XXXIII).

Symptoms.—The circumscribed variety of scleroderma is characterized by pale pink or white or yellowish-white, round, oval, or ribbon-like circumscribed patches varying in size from a pea to the palm of the hand or even larger, which are frequently surrounded by a narrow violaceous border, which on close inspection is seen to be made up of numerous minute capillaries. They are firm and inelastic to the touch, usually quite smooth and on a level with, or slightly depressed below the normal skin, although in the earliest stages they may be for a time slightly elevated. In old patches there is often a moderate amount of scaling with pigmentation, and the centre is occasionally occupied by a number of small pits resembling the dilated mouths of the sebaceous gland-ducts, with which, however, they have no relation. The number of patches varies from a single one to two, three, or more, but the number is rarely large. The affection exhibits a marked preference for certain regions, such as the face, especially the forehead, the breasts in women, the arms, and the thighs. In a certain proportion of cases the malady exhibits a zoster-like arrangement, the patches being distributed over the course of some nerve, most frequently over the branches of the fifth pair, along the distribution of the brachial plexus (Fig. 172), the intercostals, or down the posterior surface of the thigh. In rare instances it is limited to one side of the face and is then frequently accompanied by marked atrophy of all the tissues (hemiatrophia facialis).

The affection described by a number of authors under the name

PLATE XXXIII

Circumscribed scleroderma.

"white-spot" disease, characterized by a variable number of shot- to pea-sized, rarely larger, chalk-white spots, situated in most cases on the neck and upper part of the chest and back, is a variety of circumscribed scleroderma.

Subjective symptoms are usually trivial and often entirely absent; there may be, however, some itching or burning or neuralgic pain in the patches.

The course of the disease is usually quite irregular, continuing for an indefinite period. The patches may slowly increase in size for a time, then become stationary, showing little or no change for some

FIG. 172.—Circumscribed scleroderma (morphœa).

months, and finally gradually disappear, leaving little or no trace of their existence. In a certain proportion of cases, the atrophy of the skin becomes extreme—it is thin, wrinkled, scaly, and bound down to the parts beneath, exhibiting (especially in the band-like patches) a markedly scar-like appearance. When such atrophic patches are situated about a joint, particularly about small ones, they may interfere considerably with movement.

Etiology.—Both varieties of scleroderma are decidedly more frequent in women than in men. In a series of 435 cases collected by Lewin and Heller, 67 per cent. occurred in women. Although most frequent between the ages of twenty and fifty, it occurs at all periods of

life from early childhood to advanced old age. The direct cause is absolutely unknown, but exposure to cold and damp and functional disturbance of the nervous system such as may arise from worry, grief, and mental shock, seem occasionally to be predisposing causes in the diffuse form. In the circumscribed variety, long-continued irritation of the skin, the pressure of a garter or of a stay, or an injury to a nerve has been noted to precede the appearance of the disease in a certain number of cases.

It has been observed as a complication of a number of diseases of various kinds which in some instances seem to have had a causal relationship to it. Its association with Raynaud's disease has already been referred to. In a case of diffuse scleroderma, Hektoen found that the thyroid gland had undergone a fibrous atrophy which had destroyed the glandular structure, and more recently Roques, in a series of 31 cases, found changes in the size of this gland in no less than 70 per cent. Whitehouse and others obtained a positive Wassermann reaction in a small proportion of cases, but these observations are still too few to permit any positive inference to be drawn as to the possible syphilitic origin of the affection.

Pathology.—The most commonly accepted view of the nature of scleroderma is that it is a trophoneurosis. Its occasional occurrence after mental shock, or injury to a nerve, and the occasional distribution of the circumscribed variety over some nerve trunk in a zoster-like manner, are features which lend considerable support to such a view. In recent years the possibility of its being the result of some alteration or disturbance in some internal secretion, as has been suggested by Osler, has attracted some attention. As has already been observed, it is associated in a considerable proportion of cases with alterations in the thyroid gland.

The essential feature of its histopathology is a hypertrophy of the collagenous tissue. The epidermis is usually but little altered. There is occasionally a moderate hyperkeratosis, a shortening of the interpapillary prolongations of the rete sometimes amounting to their complete disappearance, and a deposit of pigment granules in the lower or basal-cell layer and in the lymph-spaces. The papillæ of the corium are flattened out and their vessels narrowed and in places obliterated. In the deeper portions the vessels are in places surrounded by a moderate cellular exudate of round cells, are narrower than normal and in places are obliterated by a thrombus. About the borders of the circumscribed patches the vessels, particularly the veins, are dilated as a consequence of a collateral hyperæmia; this explains the narrow lilac-colored zone which frequently surrounds such patches. In the advanced stages sweat and sebaceous glands show varying degrees of atrophy as a consequence of pressure from the hypertrophied collagenous fibres. The elastic tissue, according to Unna, shows no change.

Diagnosis.—The peculiar leathery induration of the skin, which is the essential feature of scleroderma, is so characterized that the diagnosis may be made without any difficulty in well-developed cases. In circumscribed scleroderma or morphœa, the circumscription of the patches, their ivory-white or yellowish-white color, the lilac-colored border which frequently surrounds them, and the induration are so characteristic that they are not likely to be mistaken for any other affection. By the inexperienced they might be mistaken for the white patches of vitiligo, but in that affection there is no palpable alteration of the skin.

Prognosis.—The prognosis in diffuse scleroderma is unfavorable. While the general health is commonly unimpaired, in extensive cases in which ulceration occurs death from exhaustion may follow. It is usually of long duration, even in the cases in which recovery eventually takes place. Of 251 cases collected by Lewin and Heller, a cure took place in 16 per cent.; improvement in 30 per cent., and in 25 per cent. death resulted. In children the prognosis is much more favorable. In the circumscribed variety the prognosis is much more favorable and recovery frequently occurs, although often only after a duration of months or years. In either form, when marked atrophy has taken place, a return of the skin to its normal condition rarely occurs.

Treatment.—Every effort should be made to improve the patient's general health. He should have a liberal diet and should be clothed in such a manner as to protect him from sudden atmospheric changes, and particularly from cold and damp. Quinine, iron, arsenic, cod-liver oil may be given in moderate doses for their tonic effect, although they have no direct influences upon the malady. Thyroid gland has been employed by a number of authors with asserted good results. Roques reports the successful use of this substance in something over 67 per cent. of a series of 67 cases collected from the literature. Other observers, however, have been less successful with this treatment. It should always be tried, especially in the cases in which any alteration in the size of the gland is present.

Locally, massage and frictions with bland ointments, such as equal parts of oleum adipis and lanolin, should be diligently employed and inunctions of cod-liver oil, although disagreeable, are also of service. Mild galvanic currents are at times apparently of use in improving the nutrition of the skin and in preventing atrophy. In morphœa (circumscribed scleroderma), in addition to the measures just mentioned, electrolysis, as advised by Brocq, may be tried in small patches, using the needle as in the removal of superfluous hairs, with a current of one to three or four milliampères. In some instances I have observed decidedly favorable results after the use of the X-ray, employing moderate exposures at intervals of five days. The hypodermatic use of a 15 per cent. alcoholic solution of thiosinamin, as recommended by Hans Hebra, has met with little favor, although Neisser speaks favorably of it.

SCLEREMA NEONATORUM

Synonyms.—Induratio telæ cellulosæ; Fr., Algidite progressive; l'Endurcissement athrepsique; Ger., Sclerem der Neugeborenen; Fett-sclerem.

Definition.—A diffuse induration of the skin occurring in new-born infants.

Although this rare malady was first accurately described by Underwood in 1784, the first recorded case was observed by Usenbenzius in the Stockholm Hospital, in 1718. At first it was confused with a similar induration of the skin accompanied by œdema occurring also in the new-born, but it was definitely separated from œdema neonatorum by the observations of Clementowsky and Parrot in 1873 and 1874.

Symptoms.—Although it may be present at birth, it usually begins shortly after, within the first ten days; in rare instances it may appear as late as the second month. The induration begins in the majority of cases upon the lower extremities and rapidly spreads upward so that in the course of three or four days the entire surface may be affected. In exceptional cases it first appears in the face and spreads downward. At first the skin is yellowish-white and wax-like, but later it is somewhat livid. When fully developed the natural lines of the skin are more or less effaced, the cheeks and lips are stiff so that the infant nurses with difficulty or cannot nurse at all; the limbs are rigid and the infant looks as if frozen. The surface is cool, pulse and respiration markedly slowed and the latter shallow and sighing. Death usually occurs in the course of five to ten days, although in the exceptional cases in which only a part of the surface is involved the affection may last for some months and recovery eventually take place.

Etiology.—The disease is most frequently observed in lying-in hospitals and in foundling asylums, in other words, in ill-developed and ill-nourished infants. In the congenital cases there is usually no discoverable cause, but in those in which it appears after birth there is commonly some affection of the gastro-intestinal tract, of the lungs, or of the heart which has seriously impaired the infant's vitality.

Pathology.—The nature of this peculiar and rare disease is still obscure. The researches of Langer and Knöpfelmacher have apparently shown that the subcutaneous fat of the new-born infant solidifies at a higher temperature than that of adults, owing to its smaller content of oleic acid, and Bayer, who has recently studied the chemistry of the fat of infants dying from sclerema is definitely of the opinion that in such infants there is a congenital specific diminution in the oleic-acid content of the subcutaneous fat, permitting it to solidify at the low bodily temperature present in these cases. Parrot believed it to be the result of a draining of the tissues of fluids by previous exhausting disease. He found the skin thinned, its blood vessels, particularly in the papillæ, contracted, and the fat diminished. These findings have been confirmed by Ballantyne, who also found an increase in the connective tissue.

Diagnosis.—Sclerema is to be distinguished from scleroderma and from œdema neonatorum. The early age at which it occurs, the rigidity of the limbs and face, and its rapid course to a fatal issue distinguish it readily from the former; from the latter it is to be distinguished by the absence of pitting (absence of œdema) and the more general distribution of the induration.

Prognosis.—Recovery is the rare exception, death usually occurring in the course of a few days. In the infrequent cases in which only a part of the surface is attacked, the prognosis is somewhat more favorable.

Treatment.—Every effort should be made to raise the bodily temperature to the normal and maintain it there. The infant should be well wrapped up and surrounded by hot water bags or placed in an incubator, and should be supplied with as much nourishment of a proper kind as can be given to it. Since it cannot nurse, it must be fed by enema or by a tube passed into the stomach.

ŒDEMA NEONATORUM

Synonyms.—Œdema of the new-born; Fr., Œdeme des nouveaunés; Ger., das Sklerödem.

Definition.—A disease of new-born infants, characterized by induration of the skin with œdema.

Symptoms.—The disease usually first appears within two or three days after birth, although in exceptional cases it may be present at birth. It begins with drowsiness and swelling and induration of the feet and legs, which extend upward to the thighs, buttocks, genitalia, hands, and arms, the swelling being most marked in dependent parts. Much less frequently the induration and œdema begin in the face or upper part of the trunk and spread downward, and in rare cases the entire cutaneous surface may be involved. The skin is pale or livid, very firm to the touch, and pits upon pressure. The body temperature is usually subnormal, although in rare cases it may be more or less elevated; the respiration is shallow and the circulation weak. The infant becomes increasingly feeble; the respiration and circulation fail; the temperature continues to decline and death usually occurs at the end of five or six days, sometimes preceded by diarrhœa or convulsions.

Etiology.—Œdema neonatorum occurs almost without exception in prematurely born, imperfectly developed infants, or in those enfeebled by pulmonary or cardiac disease. Undue exposure to cold at the time of birth and improper or insufficient nourishment are also among the predisposing causes.

Pathology.—There is an abundant serous effusion in the skin, subcutaneous tissues, and the muscles, and, in advanced cases, in the thoracic and abdominal cavities and in the ventricles of the brain. According to Luithlen, the œdema does not differ in any respect from ordinary œdema of the skin. He finds that the skin of infants suffer-

ing from this affection is not normally developed, but corresponds to the skin of a six to eight months fœtus; and, in consequence of its unusually delicate and loose structure, offers conditions especially favorable to the occurrence of œdema.

Diagnosis.—The only affection for which it is likely to be mistaken is sclerema of the new-born, which it closely resembles and with which it was formerly confounded. It differs from that affection, however, in its less general distribution, in the involvement of the palms and soles, which are, as a rule, exempt in sclerema, and in the presence of pitting after pressure (presence of œdema).

Prognosis and Treatment.—The prognosis is most unfavorable, death occurring almost invariably in the course of five to six days. The treatment is essentially the same as for sclerema neonatorum.

MYXŒDEMA

Synonyms.—Cretinoid œdema; Cachexia thyropriva; Cachexie pachydermique; Fr., Myxœdème; Ger., Myxœdem.

Definition.—A chronic constitutional disease due to suppression of the functions of the thyroid gland, characterized by a peculiar œdema of the skin, accompanied by mental symptoms.

Symptoms.—This rare affection was first recognized as an independent disease by Gull; who in 1875 described it as a cretinoid state affecting women. A few years later (1878) Ord, as the result of his study of its clinical symptoms and pathology, proposed to call it myxœdema, a name by which it has since been generally known.

The early symptoms are usually slight and ill defined; there is a moderate anæmia with poor appetite, some loss of strength, unusual susceptibility to cold, and mental sluggishness. When fully established, the skin is everywhere œdematous, firm to the touch, but does not pit on pressure as in ordinary œdema. This swelling is most noticeable in the face, imparting to the patient a peculiar apathetic expression partly the result of obliteration of the normal lines and partly due to his mental state. The lids are thick and hang in folds so that an effort is necessary to keep the eyes open; the nose is broadened as the result of thickening of the alæ, and the lips are swollen, the lower one frequently everted so that the saliva escapes from the mouth. While the swelling of the skin is general, it is not uniform, being more noticeable in some regions than in others, as in the supraclavicular region, where there may be ill-defined swellings partly due to œdema, partly due to deposit of fat. The hands and feet are larger than normal, the former presenting a peculiar flattened, "spade-like" (Gull) appearance. Because of the diminished activity of the sweat- and sebaceous-glands the skin is harsh, dry, and finely desquamating. The hair loses its lustre, becomes brittle, breaks, and falls out, and the nails are brittle and broken at their free border.

The mucous membranes of the mouth, pharynx, and larynx are

also œdematous, and the tongue is more or less swollen, sometimes excessively so.

Along with the cutaneous symptoms there is notable alteration of the patient's mentality. She is dull and listless, speaks slowly with expressionless voice, the alteration in speech being due in part to the swelling of the vocal cords, the tongue, and lips, and in part to the slowing of her mental processes. Her disposition is usually more or less altered; she is usually irritable, and symptoms of insanity appear in a certain proportion of cases.

The course of the malady is a very chronic one. The strength gradually fails, the patient becomes more apathetic, a marasmic condition ensues, which eventuates in death; or some intercurrent affection, such as nephritis or tuberculosis, carries her off.

Etiology.—The disease is one of adult life, although it may occur rarely in children. It is much more common in females than in males, fully 90 per cent. of the cases occurring in women. It is due to suppression, partial or complete, of the functions of the thyroid gland, but the cause of the thyroid disease is unknown. As Reverdin, Kocher, and others have shown, symptoms resembling those of myxœdema may follow extirpation of the thyroid (cachexia strumipriva).

Pathology.—The thyroid gland is usually atrophied, its secreting structure replaced by fibrous tissue, or it is at times larger than normal, but in such cases the glandular tissue is diminished, as in the atrophied gland, the enlargement being due to deposits of inflammatory exudate or other material which have destroyed the gland tissue. A mucoid material is deposited in the corium and subcutaneous tissue, the nature of which is still undetermined. Unna found both the collagenous and elastic tissue of the corium altered in their staining reactions, indicating degeneration of these.

Diagnosis.—The patient's mental condition, her slow, halting speech and expressionless voice, the wide extent and peculiar quality of the cutaneous œdema are so characteristic in the developed affection that the diagnosis usually presents but little difficulty. The œdema may be mistaken for that which accompanies chronic nephritis, but freedom of the urine from albumin and the absence of pitting will serve to distinguish it from that affection.

Prognosis.—Unless stayed by appropriate treatment, the disease steadily progresses to a fatal termination, although death may be postponed for many years. If proper treatment is instituted at a sufficiently early period, the outlook as to a practical cure or great improvement is quite favorable.

In very advanced cases, however, the best directed measures may fail to do more than produce a slight and temporary improvement in the patient's condition.

Treatment.—Patients with myxœdema should be protected as much as possible from cold, to which they are very sensitive, and should be given thyroid gland either in substance, in dry extract, or fluid

extract, the last hypodermatically. Some care should be taken not to begin with too large a dose, lest disagreeable symptoms, such as restlessness, shortness of breath, and rapid pulse (thyroidism) appear; as a rule, the beginning dose should not exceed one or two grains three times a day, but this may be gradually increased until fifteen or twenty grains a day are taken. Under this treatment marked improvement in all the symptoms usually appears promptly; the œdema diminishes, the sweat- and sebaceous-glands resume their functions, and the skin becomes soft and supple, the hair begins to grow, and the nervous and mental symptoms disappear.

ELEPHANTIASIS

Synonyms.—Elephantiasis Arabum; Pachydermia; Elephant leg; Barbadoes leg; Cochin-China leg; Bucnemia tropica; Spargosis.

Definition.—A chronic affection occurring endemically in many tropical and subtropical countries, sporadically in most parts of the world, characterized by extensive hypertrophy of the skin and subcutaneous tissues, situated most frequently, but not exclusively, upon the lower extremities and genitalia.

Symptoms.—Although in the fully developed disease there is little difference between the endemic and sporadic forms, the symptoms of the early stages are much more pronounced in the former. The endemic variety as seen in tropical countries usually begins with more or less decided constitutional disturbances, such as elevation of temperature, chills, pains in the limbs associated with a localized inflammation of the skin situated in most cases upon one, much less frequently both, lower extremities. This inflammation is commonly of an erysipelatous character and is frequently associated with symptoms of lymphangitis, red lines extending up and down the limb, with swelling and pain, and swelling of the lymphatic glands. These acute symptoms gradually subside, but the swelling does not entirely disappear. After an interval of some weeks or months a new attack, accompanied by the same symptoms, occurs, followed by an increase in the permanent swelling, and these are repeated until the girth of the limb finally may become three or four times greater than normal.

When fully developed, the foot is transformed into a cushion-like mass separated from the leg at the ankle by a deep narrow circular fissure; the leg is either uniformly cylindrical in shape, several times its normal diameter, or a huge tumor-like mass divided by deep sulci, exaggerated normal furrows, from which escapes a foul-smelling fluid composed of decomposed sweat, sebum, and macerated epidermis. The skin may be dry, smooth, tense, and shining, or rough, uneven, covered with warty patches and papillomatous growths, and more or less deeply pigmented.

When the superficial lymphatics are involved they form varicosities upon the surface or vesicles, which, when ruptured, either

spontaneously or by violence, discharge lymph for a considerable time (lymphorrhœa). The surface of the leg is at times covered with oozing eczematous patches, excoriations, or ulcers with considerable crusting.

Next to the lower extremities the male genitalia are the parts most frequently attacked, usually the scrotum, less frequently the penis. In women the labia and clitoris are occasionally affected.

On the scrotum the disease usually begins, as upon the legs, with febrile attacks and local inflammation, accompanied by swelling and pain, the latter at times being quite severe, usually more so than upon the legs. In the course of time the scrotum is transformed into a large dependent tumor whose surface is furrowed and fissured and in places superficially ulcerated, which may reach to the knees and below, and may weigh many pounds. If the penis is not likewise affected it gradually disappears from view at the bottom of a deep canal from which it cannot be withdrawn.

Upon the labia and clitoris it presents much the same features, although it seldom reaches the enormous proportions seen in the scrotum.

The affection known as lymph scrotum is closely related to elephantiasis. The scrotum is enlarged, but much less so than in elephantiasis, its surface usually smooth, but beset with lymphatic varices and vesicles which rupture and discharge at times a milky, at others a clear, straw-colored, coagulable fluid.

Attacks of fever and erysipelatous inflammation occur from time to time, and in a certain proportion of cases it terminates in true elephantiasis.

In infrequent cases the mammary gland in women is affected, usually along with elephantiasis of an extremity. The breast may reach a huge size, forming a pendulous mass reaching to the pubes.

Quite exceptionally the arms and face may be attacked, but the enlargement never reaches the proportions observed in other regions.

In the sporadic form (elephantiasis nostras) febrile attacks such as occur in the tropical variety are seldom seen, or if they do occur are usually much less severe. The hypertrophy of the skin and subcutaneous tissues is the same in character, but is usually much less pronounced.

The patient's general condition is in many cases but little affected, although when the febrile attacks are severe and frequently repeated, or when the flow of lymph is abundant and long-continued, exhaustion may result.

In advanced cases the frequently huge overgrowth of the legs or scrotum seriously interferes with locomotion.

Under the name *elephantiasis telangiectodes,* Virchow described a congenital condition which undergoes further development, character-

ized by a more or less pronounced localized overgrowth of fibrous and vascular tissues. This condition, while elephantoid, is not, strictly speaking, elephantiasis.

The permanent swelling of the lids and upper lip which sometimes follows repeated attacks of an erysipelatous character, to which Sir Jonathan Hutchinson some years ago gave the name solid œdema, is closely related to, if not identical with, elephantiasis.

Etiology.—Elephantiasis is infrequent in children, and is much more common in men than in women, occurring in the proportion of three, according to some authors five, of the former to one of the latter. It is seen in the dark-skinned races much more frequently than in Europeans. As already observed, it is endemic in many tropical and subtropical countries—in India, Cochin-China, the South Sea Islands, and the West Indies.

The direct cause is a microscopic worm-like parasite, the *Filaria sanguinis hominis,* infection taking place through the bite of certain species of mosquito, commonly the *Culex fatigans,* which serve as the intermediate host in which it completes its development. Entering the lymphatics, the mature filaria gives rise to inflammatory changes and consequent interference with the lymph circulation. The larvæ, which are about 0.3 mm. in length and 0.008 to 0.011 mm. in diameter, exhibit a remarkable nocturnal periodicity. Disappearing more or less completely from the peripheral circulation during the day, they begin to return with the approach of night, increase in numbers until midnight, when they may be present in enormous quantities, and then diminish again. Manson found them in great numbers in the large blood-vessels and the lungs during the day, when they were absent from the peripheral vessels.

The sporadic or non-filarial form is the sequel of repeated or long-continued inflammations of the skin and subcutaneous tissues, usually of an erysipelatous character, which result in a blocking of the lymph channels. Unna regards such cases as the result of persistent streptococcic infection, and suggests for it the name elephantiasis streptogenes.

Pathology.—The principal pathological alteration is an enormous increase in the collagenous tissue affecting all parts of the derma, but especially the lowest part, and the subcutaneous connective tissue. There is a pronounced increase in the size and number of the connective-tissue cells, many of which are provided with long processes. Scattered through the derma, as evidence of chronic inflammation, are localized, usually perivascular, accumulations of round and plasma cells with giant cells and "mastzellen," the last being unusually large. Changes in the vessels are usually considerable; the walls of both arteries and veins are much thickened, and the lumina of the latter are frequently occluded by thrombi composed of leucocytes. The

lymph vessels and the lymph spaces are dilated and the walls of the former increased in thickness. Most observers have noted a marked increase in the elastic tissue, but Unna found it decidedly diminished.

The changes in the epidermis are secondary to those in the derma. In the earlier stages there may be considerable thickening of the rete, later atrophy and hyperkeratosis. The hair-follicles, sebaceous glands and the sweat-glands are at first unaffected, but later they undergo atrophy from pressure of the fibrous tissue. Considerable deposits of pigment granules are present in the lowest cells of the rete and in the upper portion of the corium in many cases.

Diagnosis.—The picture presented by a fully developed case of elephantiasis, even when of moderate extent, is so characteristic that it is usually recognizable at once. In regions in which the affection is endemic, repeated attacks of local inflammation of the skin, accompanied by decided constitutional disturbance, even with but little swelling, should lead to examination of the blood for filariæ, remembering, of course, that the organism is to be found most readily, indeed often only, at night.

Prognosis.—The prognosis as to cure is unfavorable, the disease usually slowly but steadily progressing for an indefinite period. If, however, the patient can be removed to a region where it does not prevail endemically, and appropriate treatment is instituted early, much may be done to stay its progress. When the parts affected are so situated that they can be completely removed, such as the scrotum, a radical cure may follow surgical treatment.

Treatment.—Removal from regions in which the malady is endemic should always be advised as a measure of value in arresting or at least delaying its progress. During the febrile attacks, especially in the endemic variety, rest in bed, quinine in considerable doses, and the continuous application to the inflamed skin of compresses wet with a saturated solution of boric acid or with lead water and laudanum are useful.

When the disease is situated upon the legs, rest in the recumbent position, massage, and the continuous application of an elastic bandage, more particularly the rubber bandage, are the measures most likely to produce favorable results, especially in the earlier stages before the hypertrophy has reached large proportions. Castellani has reported favorable results from daily injections of fibrolysin combined with the foregoing. Portions of the redundant tissue may be removed surgically, and in elephantiasis of the scrotum this is probably the best form of treatment. Cutting off the blood supply by ligation of the principal vessel supplying the affected region, and division or stretching of the nerve trunk, have in some instances been followed by more or less improvement, but these procedures are always uncertain in their results.

DERMATOLYSIS

Synonyms.—Cutis laxa; Loose skin; Cutis pendula; Pachydermatocele; Chalazodermia.

Symptoms.—Under the term dermatolysis two quite distinct conditions of the skin have been described by authors. The first is distinguished by more or less thickening and laxness of the skin, which in one or more regions presents pendulous folds which at times reach enormous size, producing extraordinary deformity. Occasionally the skin is coarse, somewhat pigmented, and the mouths of the follicles unusually patulous. While any region may be affected, the condition is seen most frequently on the scalp, particularly the occipital region, the neck, the upper arm, and the thigh. The affection is probably nothing more than an exaggerated form of soft fibroma, fibroma molluscum, with the ordinary form of which it is occasionally associated (*q.v.*)

In the second form, cutis laxa, elastic skin, cutis hyperelastica (Unna), dermatolysis proper, the skin presents no visible alteration in its structure, but is remarkably extensible and elastic so that it may be picked up and drawn out sometimes to an extraordinary extent, and, when relaxed, retracts, sometimes with an audible snap. This unusual elasticity may be limited to certain regions or be present in the entire skin. In some of the reported cases the skin of the chest could be drawn up over the face, the skin of the forearm down over the hand. These are the "elastic skin men," "India rubber skin men," of the museums. Cases have been observed by Duhring, Kopp, Seifert, and Du Mesnil.

The histology of the affection has been studied by Du Mesnil, Williams, and Unna. Du Mesnil did not find any increase in the elastic fibres, as was thought likely by Kopp, but these were irregular and more twisted than in normal skin; he likewise found a myxomatous condition of the cutis. Williams and Unna agree in attributing considerable importance to the abnormal windings of the vessels and nerves. The latter found extreme splitting of the collagenous substance which he regards as an important factor in producing the unusual extensibility of the skin.

The condition is a congenital one, and is irremediable.

CUTIS VERTICIS GYRATA

Attention was first directed to this rare and very curious anomaly of the scalp by Jadassohn, who saw four cases of it. Other cases have since been reported by Unna, who proposed for it the name *cutis verticis gyrata;* by Gogrow, von Veress, and a few others.

It consists of a variable number of folds and furrows involving the entire thickness of the scalp, arranged in irregular convolutions resembling the cerebral convolutions, or less frequently in several

parallel straight lines. It affects most frequently the vertex and occipital region, but also may occur in the parietal region.

In a case seen by the author some years ago in the Skin Dispensary of the University Hospital, in the person of a young negro, twenty-two years old, there were four parallel folds as thick as a finger in each parietal region, running anteroposteriorly (Fig. 173).

Von Veress has very recently reported no less than eleven cases, two of which he was able to study histologically. In one case there

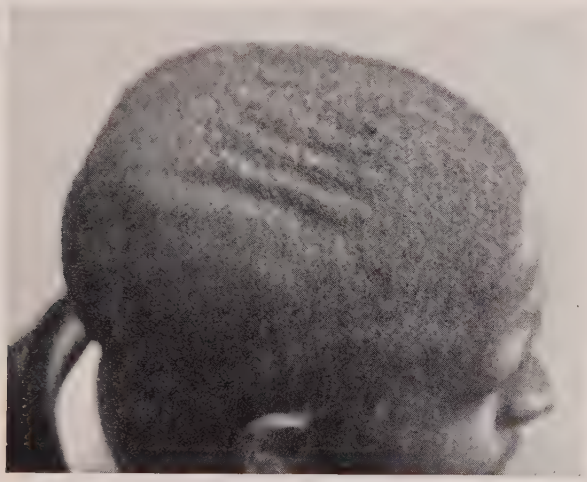


FIG. 173.—Cutis verticis gyrata (negro).

were traces of decided inflammation at the bottom of the furrow, and in both there was pronounced atrophy of the sebaceous- and sweat-glands. He concludes that the condition is probably the result of a chronic inflammation of the scalp, although he admits the possibility of its congenital origin.

No subjective symptoms of any kind are present.

The only way in which the deformity can be removed is by excision.

CHAPTER XIII

ATROPHIES—ATROPHIÆ

DERMATITIS CHRONICA ATROPHICANS

Synonyms.—Atrophia cutis idiopathica; Diffuse idiopathic atrophy of the skin; Acrodermatitis chronica atrophicans; Dermatitis atrophicans maculosa.

Definition.—A chronic inflammation of the skin, terminating in atrophy.

Symptoms.—Beginning with Buchwald in 1883, a number of authors (Neumann, Pick, Pospelow, Jadassohn, Herxheimer and Hartmann, Beck, and a few others) have from time to time reported examples of a cutaneous affection the chief characteristic of which is a diffuse, pronounced, and progressive atrophy of the skin. While these cases presented considerable variation in their clinical features, they closely resembled one another in the marked atrophy which characterized the final stage; and in all probability they represented variants of the same malady rather than separate affections. The *erythromélie* of Pick and the *erythema paralyticum* of Neumann are regarded by most recent authors as belonging in the same category. Quite recently Finger and Oppenheim have carefully reviewed the whole subject in a monograph containing reports of cases of their own and those collected from the literature.

The disease usually begins with the appearance of a variable number of patches varying from bright to dark red, which, slowly enlarging, coalesce to form more or less extensive diffuse areas with smaller patches and streaks which eventually exhibit a more or less pronounced atrophy. When the affection has reached its acme, the skin in the affected regions is thin and wrinkled like "crumpled cigarette paper" (Fig. 174), dark or brownish red, and more or less translucent, so that the vessels are readily perceived through it, with here and there small scar-like white patches from which the pigment has disappeared. On the extremities the skin lies in thin longitudinal and oblique folds except over and around the joints, where the folds are transverse. The hair is thinned or lost in the affected regions, and there is frequently a fine branny desquamation owing to the dryness of the skin resulting from suppression of the functions of the sweat- and sebaceous-glands. In rare cases the disease begins as pinkish macules or maculo-papules or nodules, which are replaced in time by a macular atrophy (Jadassohn).

In the majority of cases it begins upon the extremities (hence the name "acrodermatitis" proposed by Herxheimer and Hartmann), and may be confined to these, but it occasionally spreads to the trunk. The inflammatory early stage is often so little pronounced and devoid of symptoms that it usually escapes notice, and the atrophy is

FIG. 174.—Dermatitis chronica atrophicans

usually the first symptom to attract attention; for this reason the latter was regarded by the early observers as the primary condition. Subjective symptoms are, as a rule, absent, but there may be at times itching and burning.

Etiology and Pathology.—The limited number of cases thus far observed have occurred chiefly in middle-aged adults and somewhat more frequently in women than in men. Practically nothing is known about its primary cause. Finger and Oppenheim are inclined to attribute considerable importance to heat and cold and the weather. Fordyce observed an example in a syphilitic woman, but there was no conclusive evidence that this was more than a coincidence.

According to Finger and Oppenheim, the malady is a chronic inflammation of the skin characterized by dilatation of the vessels, œdema, cell exudation, and principally by early disappearance of the elastic tissue.

Diagnosis.—When the atrophy is fully developed, the affection is not likely to be mistaken for any other. It may at times be confounded with scleroderma, but the soft wrinkled skin of the atrophic patches is altogether unlike the firm, leather-like, ivory-white patches characteristic of the latter.

Prognosis and Treatment.—The prognosis as to the arrest of the disease and restoration of the skin to the normal condition is very unfavorable; in rare instances, however, complete recovery has been noted (Pick, Finger, and Oppenheim). The patient's general condition is in no way affected.

The skin should be protected against cold by proper clothing, and an endeavor made to improve its nutrition by warm baths, massage, electricity, and inunctions of some bland ointment, such as equal parts of cold cream and lanolin, or lanolin and oil of sesame.

ATROPHIA CUTIS SENILIS

Synonyms.—Atrophoderma senilis; Senile atrophy of the skin.

Definition.—Atrophy and degeneration of the skin, peculiar to old age.

Symptoms.—With increase in years, the skin, like other tissues of the body, undergoes certain structural changes. It loses its normal lustre and color, becomes yellowish or brownish, it is thin and wrinkled, in places hanging in loose folds, owing in part to diminution or disappearance of the subcutaneous fat, and has to a considerable extent lost its elasticity, so that when stretched it retracts slowly. In extreme cases it is very thin and partly translucent, so that the vessels beneath it can be readily seen. Upon parts exposed to sun and wind, such as the hands and face, smooth non-elevated brown or blackish freckle-like patches often appear in varying number, such deposits of pigment being especially common on the backs of the hands. Other brown or blackish patches covered with a horny adherent crust are common also upon the back of the hands and in the

face, in the latter region especially upon the forehead and over the malar eminences, which show a decided tendency to undergo epitheliomatous change in time (senile keratoses). Occasionally, here and there, small scar-like white patches appear owing to disappearance of the normal pigment. On the trunk, particularly on the upper half of the back, numbers of wart-like elevations covered with fatty crusts which are readily removed are often present (senile warts, seborrhœic warts), which, like the senile keratoses, occasionally become epitheliomatous. Vascular changes, such as telangiectases and small angiomata varying in size from a pin-head to a split pea, are likewise common in the senile skin; purpuric patches are occasionally noticed on the back of the hands and more especially upon the lower extremities, which may be spontaneous or the result of trifling unnoticed injury (purpura senilis). Quite commonly the skin of the aged is dry and finely desquamating, owing to the atrophy of the sweat- and sebaceous-glands.

Pathology.—According to Neumann, there may be a simple senile atrophy of the skin, characterized by quantitative changes only, but in most cases there are qualitative changes as well. There is a more or less pronounced thinning of the epidermis affecting the rete chiefly, the cells of which are smaller than normal; its interpapillary prolongations are greatly shortened or have in large part disappeared, corresponding with a like shortening of the underlying papillæ. In places there is a circumscribed increase in the thickness of the horny layer. There is an increased amount of pigment present in both the epidermis and corium. The follicles and glands show more or less pronounced atrophy. In addition to these quantitive changes the corium frequently exhibits certain qualitative changes. The elastin is transformed into elacin, and the collagen into collacin and collastin, changes which are indicated by alterations in the structure and tinctorial properties of these tissues.

Treatment.—Although senile changes cannot be altogether prevented, nor the skin restored to its former condition when they have occurred, much may be done to delay their appearance by proper hygiene and the use of a nutritious diet containing an abundance of easily digested fat, together with cod-liver oil. Massage and warm baths followed by inunctions of some bland fat, such as lanoline diluted with oil of sweet almond or oil of sesame, are useful in promoting the nutrition of the skin.

Senile keratoses and seborrhœic warts, when present, should receive special attention, owing to the possibility of epitheliomatous degeneration taking place in them.

STRIÆ ET MACULÆ ATROPHICÆ

Synonyms.—Atrophia striata et maculosa; Atrophoderma striatum et maculatum.

Definition.—Atrophy of the skin, occurring in streaks and patches.

Symptoms.—Atrophic striæ appear as stripes of varying length and breadth, which, when recent, are slightly livid, but later become pinkish, white, or pearly-white, and sometimes, when old, slightly pigmented. They are somewhat depressed below and visibly thinner than the normal skin, with a slightly wrinkled surface, and vary in breadth from 2 to 6 mm. and in length from 1 to 6 or 8 cm. They are usually multiple, and those in the same region are arranged more or less parallel with one another, although this is not invariably the case. They are situated most frequently in regions in which the panniculus adiposus is well developed, especially the abdomen, the inner and anterior surface of the upper thighs, the upper arm; much less frequently they are situated about the joints, especially the knees (striæ patellores). Upon the abdomen they are common in women who have been pregnant (*lineæ albicantes, vergetures, Schwangerschaftsnarben*), and similar stripes occur in the breasts as the result of lactation; they may also follow ascites and abdominal tumors. In the former region they are arranged horizontally at the level of the umbilicus, but run obliquely, parallel with the line of the groins, on the lower abdomen; on the breasts they are arranged radially. The direction of the stripes is in general at right angles to the direction of the greatest tension in the skin. As a rule they appear gradually and are unaccompanied by subjective symptoms. Evans has very recently reported a case, however, in which they appeared quite suddenly on the back in the course of two or three days.

Similar alterations of the skin occurring as whitish spots or patches are also observed either in association with the striæ or independently of these (maculæ atrophicæ). Liveing, Duhring, Jadassohn, and a few others have described cases of macular atrophy in which the patches were numerous, varying in size from a lentil to a coin, and were preceded by erythema and some infiltration. Jadassohn proposed the name *anctodermia erythematodes* for the affection he described. There is little or no doubt that these cases represent a pathological process quite distinct from that occurring in atrophic striæ.

Etiology and Pathology.—Atrophic striæ are in the majority of cases produced by rapid overdistention of the skin such as occurs in the mammæ and abdomen of women in pregnancy, in ascites and rapidly growing or very large abdominal tumors. They also occur in those who have grown stout rapidly and are often then situated not only on the abdomen, but on the upper thighs, the upper arms, and on the buttocks. Not all, however, are of this origin. A certain proportion follow severe acute illness, such as typhoid fever, as in the case observed by Shepherd, in which extensive striæ occurred over and in the neighborhood of the patellæ; they have also been observed after scarlet fever (Osler, Bleibtrau, Silberstein). The origin of the macular lesions is for the most part unknown.

Troisier and Ménétrier, whose observations have been confirmed

by Unna, found striking changes in the elastic tissue in the striæ. In the centre of the striæ it had disappeared, while it was increased about the borders, and many of its fibres were ruptured. Unna found that numerous elastic fibres had undergone transformation into elacin (basophilic elastin). As the result of tension, the collagen bundles of the corium no longer interlace, but are stretched out parallel with the direction of the tension. The follicles and glands are more or less atrophied or absent. In the cases of macular atrophy described by Jadassohn there was complete absence of elastic tissue in the patches.

Diagnosis.—The appearance of the striæ is so characteristic that errors in diagnosis are not likely to occur. The macular lesions are to be differentiated from scars and from circumscribed scleroderma (morphœa).

The condition is irremediable.

KRAUROSIS VULVÆ

Definition.—A disease characterized by atrophy of the skin and mucous membrane of the vulva.

Symptoms.—This infrequent malady was first described by Breisky under its present name in 1885, although cases of what was probably the same affection had been previously described by Weir and Lawson Tait, by the latter as a vascular degeneration of the vulva with atrophy of its mucous membrane. Cases have since been reported by Janovsky, Ohmann-Dumesnil, Baldy and Williams, Jayle, Thibierge, and a few others.

The disease usually begins insidiously without any very definite symptoms, although in a certain proportion of cases pruritus precedes the atrophy and may be a marked symptom. The labia majora are wrinkled and atrophic, the hair thin or lost, the mucous surface smooth, yellowish, or whitish, with occasional patches of leucoplakia or small vascular areas; the labia minora are reduced to small vertical folds, or may completely disappear, and the *præputium clitoridis* is similarly atrophied. The *ostium vaginæ* is narrowed, at times so greatly as to scarcely admit the finger, and has lost its elasticity so that it is no longer distensible, making coitus difficult and very painful. Jayle, who has recently studied the malady very thoroughly, recognizes four forms—Leukoplasic kraurosis, corresponding with the form described by Breisky; inflammatory kraurosis, of which the affection described by Lawson Tait was an example; senile kraurosis; and operative kraurosis, that which follows removal of the ovaries.

Etiology and Pathology.—The causes and origin of this malady are obscure. It occurs in women past the menopause, or in those who have had their ovaries removed surgically. As already observed, pruritus frequently accompanies it and the irritation and inflammation produced by scratching are regarded by some authors as having a causative relationship to it. In the majority of cases there is a

vaginal discharge, either an ordinary leucorrhœa or gonorrhœa. Finger regards it as closely related to chronic lichen. According to Perrin, leucoplakia and kraurosis vulvæ are only different degrees of the same affection. There is little doubt that simple senile kraurosis is nothing more than an atrophic process such as is common to the skin and mucous membranes in old age.

Breisky found in sections of the labium minus a thinning of the rete, and in the deeper portion of the corium a small-celled infiltration. The papillary body and the upper portion of the corium were sclerosed.

Prognosis and Treatment.—The disease is usually a slowly progressive one and is but little influenced by treatment. In the cases in which leucoplasic patches are present upon the mucous surface, epithelioma occasionally follows. Baldy and Williams advise the total extirpation of the affected region.

AINHUM

Definition.—An endemic disease of the tropics characterized by a constricting furrow surrounding one or more toes, terminating in spontaneous amputation.

This affection was first described by Clark as a disease endemic among the negroes of the west coast of Africa, and somewhat later independently by Da Silva Lima, who observed it among the negroes of Brazil.

Symptoms.—It begins as a furrow situated at the base of the little toe, on the inner and plantar surface, which gradually increases in depth and extends to the outer side and dorsal surface until it completely encircles the member. As the furrow deepens, the toe becomes greatly swollen, looking as if encircled by a tight ligature, and ulceration is apt to occur in the bottom of the furrow, which is accompanied by pain and an offensive discharge. After some years the toe is attached only by a flexible pedicle and is occasionally accidentally knocked off, or is amputated because of the interference with walking; if left to itself, it eventually is completely detached by the progress of the disease. Until ulceration occurs it is usually painless, although exceptions are occasionally observed. As already noted, the disease in the great majority of cases attacks the little toe, but may also affect the fourth, but very rarely the other toes. It may be limited to one foot, or both little toes may be affected either simultaneously or one after the other. In rare instances a similar constricting furrow has been observed on the fingers (Stelwagon, a case affecting the little finger).

Etiology and Pathology.—The cause of this very curious affection is altogether unknown. It occurs almost exclusively in the dark races, especially in negroes, but a few cases have been reported in Europeans. It is confined for the most part to the west coast of Africa and to Brazil, but sporadic cases are occasionally seen in some of the islands

of Polynesia and among the negroes of the southern United States. It is a disease of early adult life, but is rare in children and the old; males are more often attacked than females. Da Silva regarded heredity as an important predisposing factor; he saw families of negroes in which all the members were affected. Both parents of Duhring's patient had the disease. It may be pointed out, however, that such occurrences may as readily be explained by infection as by heredity. Manson thinks it probably the result of injury which occurs so readily and so frequently in those who go barefoot, and Wellman thinks that it may be produced by jiggers. The former makes the observation that a similar affection occurs in the tail of a certain species of monkey.

The nature of the malady is very obscure. By some authors it is regarded as a trophoneurosis, by others an unusual form of scleroderma; Manson saw a negro in whom one little toe presented a scleroderma while the other presented a well-marked ainhum. Zambaco Pasha thinks it a modified form of leprosy, but there is little evidence to support this opinion.

The histopathology has been studied by a number of observers (Eyles, Wile, Moreira, and others), who practically agree in their findings. All the layers of the epidermis are greatly hypertrophied; the papillæ contain an abundant exudation of cells and the deeper vessels of the cutis and the hypoderm present alterations characteristic of obliterating endarteritis. In the furrow there is a fibrous hypertrophy of the collagen. The furrow may surround the joint or occur at the metatarso-phalangeal joint, or in the continuity of the phalanx which presents the changes indicative of a rarefying osteitis.

Prognosis and Treatment.—The course of the malady is a steadily progressive one and almost invariably terminates in the loss of the toe, which takes place after five to ten years.

In advanced cases the toe should be amputated, since nothing can be done to stay the progress of the malady; the toe is only a hindrance in walking, and the source of great pain and discomfort when ulceration has occurred. In the very early stages Da Silva Lima found that transverse division of the furrow arrested the process.

PERFORATING ULCER OF THE FOOT

Synonyms.—Malum perforans pedis; Fr., Mal perforant du pied; Ger., Perforirendes Fussgeschwür.

Definition.—An ulcer of trophic origin situated upon the sole of the foot.

Symptoms.—This infrequent affection, which was first described by Nélaton, and given the name by which it is generally known by Vesignié, is situated upon some portion of the sole exposed to pressure, in most cases at the metatarso-phalangeal joint of the great or little toe. It begins as a callosity, beneath which after some time ulceration occurs; the callosity is then cast off, disclosing an ulcer which communicates with the deeper tissues by a sinus which may

extend down to and lay bare the bone which undergoes necrosis. The margins of the ulcer are surrounded by a thick layer of horny epidermis and the bottom is occasionally covered with granulations. At times all parts of the sole exposed to pressure exhibit a more or less marked degree of hyperkeratosis. The ulcer is, as a rule, painless, and there is usually more or less anæsthesia of the parts surrounding it; walking, however, is frequently painful, and in exceptional cases there is spontaneous pain in the foot. Occasionally the foot is cold and livid and perspires abundantly, the perspiration having a disagreeable odor. The ulcer is usually single, but there may be two or more, either on the same foot or on both. In rare instances it has been seen upon the hand (Terrillon, quoted by Crocker). The disease pursues a slow, indolent course, and, if the foot is put at rest, healing may in time take place, but the ulcer reappears when the foot is used.

Etiology and Pathology.—Perforating ulcer is observed far more frequently in men than in women; of ninety-one cases collected by Gasquel, eighty-four were males. It is most common between the ages of thirty and fifty and is infrequent before twenty. In a large proportion of cases it is associated with some disease of the central or peripheral nervous system, such as locomotor ataxia, leprosy, peripheral neuritis. Of Gasquel's 91 cases, 69 had some disease of the central nervous system, 32 of them tabes. In a few instances it has been observed to follow diabetes.

Savory and Butlin, who made a careful study of five cases, were of the opinion that it was the result of pressure upon, or injury to, tissues whose vitality had been impaired by defective nerve supply, an opinion which has been generally accepted as correctly explaining the origin of the malady. These investigators, who examined sections of the anterior and posterior tibial nerves in the foot, found the epineurium, perineurium, and endoneurium much thickened, the nerve fibres smaller than normal, the ultimate fibrils atrophied, and the smallest completely obliterated.

Diagnosis.—The malady is to be distinguished from simple ulcer, from suppurating corns, and callosities. From these it is usually readily differentiated by the painless character of the ulcer, its sluggish course, the presence of a sinus leading down to the bone, and its association with some affection of the nervous system.

Prognosis and Treatment.—The prognosis is unfavorable; even when healing does take place, it is only temporary, the ulcer reappearing with the resumption of the use of the foot. Even amputation of a part or the whole of the foot is apt to be followed in time by recurrence in the stump. Treves recommends the removal of the thick horny epidermis around the ulcer by paring, and poultices and filling the sinus with a cream of salicylic acid and glycerin containing ten minims (0.65) of carbolic acid to the ounce (32.0). After healing has taken place, a perforated felt pad should be worn over the site of

the ulcer. Stretching of the sciatic or posterior tibial nerve has also been advised (Bevan Rake).

GLOSSY SKIN

Synonyms.—Glossy fingers; Atrophoderma neuriticum; Liodermia neuritica.

Definition.—An atrophic condition of the skin affecting in most instances the fingers.

Symptoms.—Attention was first specially called to this affection by Paget under the name of "glossy fingers," and it was described later by Mitchell, Morehouse, and Keen as a sequel of gunshot wounds and other injuries to nerves. The condition had been previously noted, however, by Romberg and others. The skin of one or more fingers is red, smooth, and shining, the normal lines of the skin more or less completely effaced. At times the color is dusky or somewhat livid and mottled, as in chilblain, which the affection may resemble in appearance quite closely. After a time the fingers become thin and tapering, often slightly flexed, the nails are curved from side to side and over the ends of the fingers, and occasionally the skin is retracted from the matrix, leaving it exposed; upon the toes painful fissures and ulcers may thus arise. The skin is, as a rule, abnormally dry, but exceptionally there may be hyperidrosis; the hair usually disappears from the affected region. Neuralgic pain or severe burning (causalgia) frequently precedes and accompanies the changes in the skin, and the parts are sensitive and extraordinarily susceptible to trauma. In a case under the author's care, occurring in a housemaid, in which the affection had followed a partial severance of the ulnar nerve, the use of a broom or a dusting-brush for a short time was always followed by ulcers on the ring and little fingers which were weeks in healing.

Etiology and Pathology.—The affection is essentially a neuritis, which, interfering with the trophic function of the nerves supplying the affected region, leads to atrophy of the skin and its appendages. In the great majority of cases the neuritis is the consequence of trauma, but it may also follow a non-traumatic neuritis, such as may occur in gout, rheumatism, leprosy, and syphilis; in a few instances it has been observed to follow a chronic inflammation of the cord. In a case limited to the index finger under the author's observation for many years, it followed a puncture with an awl.

Prognosis and Treatment.—The prognosis depends very largely upon the nature of the nerve lesion which has produced it. As a rule, the tendency is to recovery, but the recovery is usually slow, requiring months or even years, and occasionally the trophic changes continue indefinitely.

The treatment is essentially that of neuritis. The parts should be carefully protected from cold and injury.

CHAPTER XIV

ANOMALIES OF PIGMENTATION—ANOMALIÆ PIGMENTATIONIS

LENTIGO

Synonyms.—Ephelis; Freckle; Fr., Ephelide, Lentille, Tache de rousseur; Ger., Linsenflecke, Sommersprosse.

Definition.—A pigmentary disorder of the skin characterized by light to dark-brown spots, varying in size from a pin-head to a pea, situated for the most part upon uncovered parts, such as the face and hands.

Symptoms.—Freckles vary in color from light to dark brown, or, in dark-skinned subjects, to black. They are round, oval, or irregular in shape and vary in size from a pin-head to a pea, small and large ones usually intermingled, but occasionally they are all very small or all quite large. They vary greatly in numbers; at times they are few and widely separated, at others they are very numerous and almost confluent, covering the greater part of the face and backs of the hands. While in most cases confined to the face, hands, and forearms, they also occur occasionally upon the trunk, the buttocks, thighs, and penis (Duhring); in these covered regions they are popularly known as "cold freckles." Crocker saw a case in which they appeared first upon the thighs, to which they remained limited for a considerable time, but eventually they also appeared upon the face. In rare cases they may be unilateral (cases of Robinson, Pernet). They are occasionally associated with multiple soft fibrous tumors, fibroma molluscum (von Recklinghausen's disease), and are one of the symptoms of xeroderma pigmentosum. They are frequently observed upon the backs of the hands of elderly or aged individuals, often associated with senile warts and senile keratoses. They often appear quite suddenly, in the summer season as a rule, and are much darker in summer than in winter; in the latter season they fade noticeably, and when light in color they disappear entirely until the return of summer. They are not accompanied by subjective symptoms of any kind.

Etiology and Pathology.—There is no difference in the frequency with which the two sexes are affected. They are seen much more frequently in those with fair complexions than in dark-skinned subjects, but the latter are by no means immune. Individuals with red hair are especially apt to have them; indeed, they almost invariably present some degree of freckling. They are rarely seen in quite young children, but usually appear about the eighth to the tenth year. A number of cases of congenital freckles have been reported, but these properly belong to the class of pigmented nævi.

The chief cause is exposure to light, but that this is probably not the only etiological factor is indicated by the not very rare occurrence of freckles upon the covered parts of the body.

The only histological change is an increase of pigment in circumscribed areas of the epidermis, in the lower layers of the rete, both between and within the cells. A few pigment-containing cells are also present in the papillæ and in the subpapillary portion of the corium, chiefly in the neighborhood of the vessels.

Treatment.—The pigment may be removed by producing an active desquamation of the epidermis, but in the great majority of cases it returns sooner or later and the treatment must be repeated. One of the most commonly employed and at the same time most effective remedies is bichloride of mercury, in aqueous or alcoholic solution, from one to five grains (0.065 to 0.32) to the ounce (0.32). This should be applied frequently with a bit of absorbent cotton or gauze until a mild dermatitis is produced, when it should be suspended; with the desquamation which follows, the pigment disappears. When it is desired to produce a more rapid result and deeper effect the stronger solutions may be applied continuously on gauze for some hours until vesication is produced; an abundant desquamation follows. This latter method should be used with great care, as there is considerable risk of producing a severe inflammation which may be followed by scarring. Salicylic acid is equally effective and much less likely to be followed by undesirable results. It may be used as an alcoholic solution of 4 to 5 per cent. strength, which should be applied several times a day until scaling occurs; or it may be used as a 10 to 20 per cent. paste or plaster, which should be applied continuously for several days until peeling begins. Pure carbolic acid may be lightly painted on the spots for the purpose of producing desquamation. When the freckles are light colored, an ointment of ammoniated mercury and subcarbonate of bismuth, one drachm (4.0) each to the ounce (32.0), is often of service. The frequent application of hydrogen peroxide will often produce a decided bleaching, but it must be continued. When the freckles are limited in number, they may be removed by electrolysis, using a current of one or two milliampères and inserting the needle into the epidermis only a short distance, at several points, for three to five seconds.

CHLOASMA

Synonyms.—Melanoderma; Melasma; Liver spots.

Definition.—Increased pigmentation of the skin occurring as variously sized patches or in diffuse areas.

Symptoms.—The discoloration varies from a pale yellowish-brown to dark brown or black; it occurs in patches of varying size and shape, usually with ill-defined margins, or it may occupy the whole of a region, such as the face or the trunk, or even the entire surface of the body. It may occur as an independent affection, *chloasma idio-*

pathicum, or it may be secondary to or accompany some visceral or general disorder, *chloasma symptomaticum.* It may appear somewhat suddenly or gradually, it may be transient or permanent, in the former event its duration varying from few to many months. The affected areas show no structural alteration of the skin, and there are no subjective symptoms resulting from the discoloration. In idiopathic chloasma the discoloration is usually limited in extent, and in the majority of cases occupies the exposed regions, but exceptions are not uncommon. In long-standing pediculosis corporis the entire trunk and extremities at times assume a dark brown or almost black discoloration as the result of the long-continued irritation produced by the parasite and more particularly by the scratching (pityriasis nigra, Willan). In the symptomatic variety the pigmentation is frequently more or less general, although, like the idiopathic form, it may be limited to certain regions. One of the most frequent forms of symptomatic chloasma occurs in pregnancy or in association with uterine disease, *chloasma uterinum.* It is distinguished by yellowish-brown or dark-brown patches with ill-defined margins, situated upon the forehead and cheeks, which make their appearance in the early months of pregnancy and become more pronounced in color as the pregnancy advances. In the majority of cases the discoloration slowly disappears after the termination of the pregnancy, but may remain and increase in depth with each succeeding one. When associated with disease of the uterus or its appendages, its course and duration are somewhat indefinite. Much less frequently the pigmentation is not limited to the face, but extends upon the neck and various parts of the trunk. During pregnancy parts which are normally somewhat pigmented, such as the areola of the nipple, become decidedly darker.

Etiology and Pathology.—Idiopathic chloasma is in most instances the consequence of prolonged local irritation of the skin. It may follow exposure to the rays of the sun or to the X-ray, or to heat, as in the pigmentation which may follow the prolonged exposure of the legs to the heat of a fire or the long-continued application of a hot-water bag. It may result from the application of a sinapism or blister. Occasionally it results from prolonged pressure, as when it occurs about the waist from a tight corset, or on the legs from the garters. Pigmentation arising from these local causes is usually transient, although its disappearance may be slow, and exceptionally it may be permanent. More or less permanent pigmentation frequently follows chronic inflammations of the skin, especially when situated upon the lower extremities, and in the same region may follow prolonged venous stasis without actual inflammation. Pigmentation which may be transient or permanent frequently follows syphilitic eruptions and is a common sequel of lichen planus, in which it may be of the most pronounced character, at times being almost black. Pigmentation, usually of a patchy character, also occurs in leprosy and in xeroderma pigmentosum.

A small number of systemic or visceral diseases are accompanied by pigmentation of the skin, which is usually of a diffuse character. In Addison's disease the skin is more or less markedly discolored, and deposits of pigment occur in the mucous membranes. In hæmochromatosis, or bronze diabetes, the skin is extensively and markedly pigmented, the color varying from brown to blue-black, and in the rare disorder known as *ochronosis*, characterized by blackening of the cartilages and fibrous tissues with alkaptonuria, the skin is at the same time pigmented, either diffusely or in limited regions. Reference has already been made to the influence of pregnancy and diseases of the uterus and its adnexa upon the occurrence of chloasma.

A general pigmentation, usually of moderate degree, frequently occurs in the later stages of wasting diseases such as tuberculosis and malignant neoplasms (chloasma cachecticorum).

The prolonged use of arsenic is at times followed by extensive pigmentation of the skin, which is of a dirty grayish-brown and presents a mottled appearance (melanosis arsenicalis); it is at times accompanied by other evidences of arsenicism, such as palmar and plantar keratosis and peripheral neuritis, as in a case recently seen by the author.

The pigment present in chloasma is with very few exceptions melanin, which is normally present in the skin; in hæmochromatosis it is hæmosiderin, a pigment containing iron. It is situated in the basal-cell layer of the rete and in the layers immediately above. In the papillæ and between the cells of the lower portion of the rete are an abnormal number of large branched pigment-containing cells, the melanoblasts of Ehrmann. No other changes are present.

Diagnosis.—The affections with which chloasma is most likely to be confounded are vitiligo and tinea versicolor. In the former the pigmentation surrounds depigmented white areas and presents a sharply defined concave border, while in chloasma it occurs as patches with ill-defined convex borders. The patches of vitiligo are usually symmetrically distributed, those of chloasma show no such arrangement. In tinea versicolor the discoloration is seated in the horny layer of the epidermis, which may be readily scraped off with the nail, and in the scrapings the microsporon furfur is readily demonstrated with the microscope.

Prognosis and Treatment.—The prognosis depends largely upon the cause of the pigmentation. In many of the cases arising from local irritation the discoloration disappears eventually when the cause is removed, but exceptions are not rare. Uterine chloasma usually disappears after the termination of the pregnancy or the removal of the uterine disease with which it is associated. The prognosis of the general pigmentation which occurs with Addison's disease or other general disorders is, of course, the same as that of the latter. Arsenical pigmentation usually disappears with the suspension of the drug, but may persist for a considerable time.

The treatment of chloasma is essentially the same as that for lentigo, to which the reader is referred.

VITILIGO

Synonyms.—Leukoderma; Leukopathia; Leukasmus acquisitus.

Definition.—An acquired defect of pigmentation characterized by circumscribed milk-white patches with more or less hyperpigmented margins, symmetrically distributed.

Symptoms.—The disease usually begins quite insidiously with the appearance of a variable number of small oval or round white patches which gradually increase in size. According to Unna, the loss of pigment is always preceded by a diffuse hyperpigmentation, but this early stage almost invariably escapes notice. Exceptionally the affec-

Fig. 175.—Vitiligo.

tion begins quite suddenly and extends rapidly. As the patches slowly enlarge peripherally, several of them unite to form larger areas with serpiginous or polycyclic borders, and in time the greater part of the pigment of the entire surface may disappear, leaving the skin milky-white or pink. In this manner an apparent spontaneous cure takes place, since the characteristic contrast between the pigmented and depigmented areas no longer appears, and the patient has apparently nothing more than a very white delicate skin. The skin about the borders of the white patches is usually darker than normal, as if the pigment had been crowded out of the centre to the periphery of the patches. On exposed parts, such as the backs of the hands (Fig. 175), the sides of the neck, and the face, the disease is much more noticeable in the summer than in the winter, owing to the darkening of the skin about the depigmented areas which are unaffected by the light. The number of patches present is quite variable; they may be few or very numerous, and usually show a pro-

nounced preference for certain regions, such as the backs of the hands, a very common site, the sides of the neck, the face, and the genital region, but may occur in any region. In the great majority of cases they are distributed symmetrically, as on the backs of both hands, both sides of the neck, and on both sides of the trunk in the same regions. The hair in the white patches is also white, and occasionally the scalp shows one or more white tufts of hair, or the brows may be white, as in a case under the author's observation at the present moment. The malady is usually progressive, the old patches growing larger and new ones appearing, until a large part of the skin, or even all of it, may be depigmented. In a negro between fifty and sixty years of age under the author's observation some years ago, every vestige of the black pigment had disappeared except a half-dollar-sized patch over the malar eminences, a region which is usually the last to lose its pigment in these practically universal cases. In a small minority of cases the patches, after reaching a certain size, no longer enlarge, but remain unaltered indefinitely. There are no subjective symptoms.

Etiology and Pathology.—Little or nothing is known about the direct cause of vitiligo. It is infrequent, but not unknown, in childhood; Crocker saw a case in a child four years old. It is most frequently seen in the second and third decades of life. Sex exerts little or no influence upon its incidence. It is considerably more common in the dark races than in the white; according to Forel, it is very common in certain districts of Colombia situated on the north coast, the inhabitants of which are a mixture of negroes, Spaniards, and Indians. In some instances it has been observed to follow nervous disturbances, such as mental shock or injury to a nerve branch. Occasionally it follows long-continued local irritation. It is believed by some authors, especially the French, to be occasionally due to syphilis. In some instances heredity seems to have been a predisposing factor. In a considerable proportion of cases it is associated with such diseases as Graves's disease, or with other cutaneous diseases, such as alopecia areata, lichen planus, and psoriasis. Its association with the last-named affection is not very infrequent; in an extensive case of inveterate psoriasis under the author's care for a number of years an extensive vitiligo has developed (Fig. 176). In a small number of instances the author has observed it follow a long-continued pruritus of the scrotum and perineum, the loss of pigment occurring only in the pruritic areas.

Most pathologists are agreed in regarding vitiligo as a purely pigmentary trouble, but Darier found in a case of vitiligo affecting the prepuce considerable cellular exudate in the upper portion of the cutis at the hyperpigmented margin of the patches. Pigment is entirely absent in the rete of the white areas, but is still present in diminished quantity in the cutis. At the hyperpigmented margin of the depigmented areas both the epidermis and the cutis contain

large quantities of dark-brown or black pigment, which in the former is situated both within and between the epithelial cells, and in the latter is contained in large, round, oval, and stellate cells, most numerous in the papillæ and around the vessels, follicles, and glands. Darier found the accumulation of pigment in the epidermis most abundant

Fig. 176.—Vitiligo, following psoriasis; patches of the latter are present in lumbar and gluteal regions.

in the lower layers of the interpapillary prolongations of the rete, much more so than over the summits of the papillæ.

Diagnosis.—Vitiligo is occasionally mistaken for chloasma, but the latter is an increase of pigment unaccompanied by white patches, is situated upon the face, usually the forehead and cheeks, and in the great majority of cases the patches have ill-defined margins with convex

borders, the reverse of what occurs in the hyperpigmentation about the white patches of vitiligo.

Vitiligo and tinea versicolor are occasionally confounded, but the latter is almost invariably confined to the covered parts, chiefly the trunk, the brown patches readily scale off upon scraping with the nail, and in the scales thus removed the microsporon furfur, the causative fungus, is readily demonstrated microscopically.

The patches of circumscribed scleroderma (morphœa) and certain cicatrices may resemble superficially the white areas of vitiligo, but there is always more or less evident structural alteration in these, which is never present in the latter.

Depigmented areas frequently occur in lepra, but these are more or less decidedly anæsthetic and are accompanied by other symptoms of leprosy.

The white, pigmentless areas characteristic of partial albinism resemble those of vitiligo, but the former are congenital and stationary, the latter are acquired and almost always progressive.

Prognosis and Treatment.—As already noted, the tendency of the patches is to grow larger; in rare instances, after enlarging for a time they become stationary and remain so indefinitely. When large areas have been deprived of pigment, an apparent cure takes place through loss of contrast between the white areas and the normal or hyperpigmented skin which surrounds them. Very exceptionally the pigment returns and the skin resumes its normal condition.

Treatment is very unsatisfactory; as a rule, to which there are very few exceptions, nothing can be done to restore the pigment, but occasionally the long-continued administration of arsenic in considerable doses seems to favor its return. Buschke observed a partial return of pigment in the depigmented areas after exposure to the light of the quartz lamp, especially about the follicles, but the restoration was not permanent.

ALBINISMUS

Synonyms.—Albinism; Leukoderma congenita; Leukopathia congenita; Achromia congenita.

Definition.—Congenital absence of pigment in the skin, hair, and choroid, partial or complete.

Symptoms.—Albinos, as the subjects of albinism are called, have a milky-white skin, white, fine, silky, or yellowish-white, flaxen hair, light blue or pinkish irides, and the pupils show a pink or red reflex from the non-pigmented choroid behind. Owing to the absence of pigment in the structures of the eye, there is usually a more or less pronounced photophobia, the patient partially closing the lids in the endeavor to moderate the light, often accompanied by more or less nystagmus. The defect is a permanent one and shows no change during the subject's lifetime. In many instances the albino is below the normal, both mentally and physically, but there are many exceptions to this rule.

Partial albinism is characterized by congenital absence of pigment in one or several circumscribed areas, producing a piebald appearance. In these areas, as in the universal form, the skin is milky-white or pink, and the hair in them, as a rule, but not invariably, is also without pigment. They are of various sizes and shapes, and occasionally are limited to the area of distribution of certain nerves (Lesser, Hutchinson). Occasionally the absence of pigment is confined to a circumscribed area in the scalp, giving rise to a white tuft of hair (poliosis circumscripta), a peculiarity frequently inherited; Stricker has recorded an instance in which such a white tuft was present in six generations of one family (quoted by Lesser). In partial albinism the pigmentary structures of the eye are unaffected. As in the universal form, the absence of pigment is permanent; in a few instances the patches have been observed to increase in size.

Etiology and Pathology.—The only etiological factor of which we have any definite knowledge is heredity, which plays a very prominent, if not the most important, rôle in its production. It is very apt to appear in successive generations of certain families, and its transmission and distribution take place according to Mendelian principles. Sym has recorded the case of a family of seven children in which every alternate child, beginning with the first, was an albino. It is to a considerable extent a racial peculiarity, negroes being much more liable to it than the white race, the partial form being especially peculiar to them (piebald negroes). Seligman states that there is a race of albinos among the Papuans. It is not confined to man, but also frequently appears in some of the lower animals, a very familiar example being the albino rabbit.

Apart from the absence of pigment, the skin presents nothing abnormal.

The condition is irremediable.

ARGYRIA

The long-continued internal use of silver nitrate may be followed by a peculiar slate-colored or bluish discoloration of the skin which affects not only the entire cutaneous surface, but the visible mucous membranes as well. While in most cases due to the prolonged internal administration of the drug, it has been in a few instances observed after the frequently repeated and long-continued use of solutions or the solid stick to the throat; it may also occur in those who handle silver (trade argyria). The discoloration, while general, is much more noticeable upon exposed parts, owing to the well-known effect of light upon the salts of silver. Since nitrate of silver has been replaced by the bromides in the treatment of epilepsy, argyria is much less frequently seen than formerly. A considerable quantity of the silver salt is necessary to produce the discoloration; according to Krahmer (quoted by Crocker), the smallest quantity known to have produced it is 450 grains (30.0). According to Branson, the appear-

ance of the discoloration in the skin is preceded by a blue line at the margin of the gums like that seen in plumbism.

The silver is deposited in the skin at the junction of the rete and the papillary layer of the corium, where it forms a dark-brown or blackish line of varying width. It is also deposited in the membrana propria of the sweat- and sebaceous-glands, and to a slight degree in the ducts of the former. As has been shown by Neumann and Blaschko, it has a special affinity for the elastic fibres, on which it is abundantly deposited. Neither the epithelium of the rete nor that of the glands is affected.

The condition is irremediable, although a few isolated instances of a lessening of the discoloration and its disappearance have been reported. Yandell noted its disappearance in two syphilitic subjects who had been treated by potassium iodide and mercurial vapor baths.

TATTOOING

Synonyms.—Fr., Tatouage; Ger., Tätowierung.

In tattooing, various vegetable and mineral pigments are introduced into the skin to form designs according to the fancy of the subject or the operator. The chosen design is first pricked into the skin with a needle or bunch of needles, and the coloring-matter immediately rubbed into the punctures. The pigments commonly employed are India ink, carbon (usually as gunpowder), and indigo for blue, and vermilion (mercuric sulphide, cinnabar), and carmine for red. The colors are permanent and can only be removed, if at all, with difficulty. Nearly all the methods employed for the removal of tattooing have for their aim the production of a superficially destructive inflammation of the skin by which a superficial eschar is formed, which, when it falls, takes with it more or less of the coloring matter and usually leaves a scar. When the pigmented area is small it may be most readily removed by excision. Stelwagon has used electrolysis with success in small patches; a small eschar is produced by introducing the needle obliquely into the skin all around the pigmented area, at intervals of about an eighth of an inch, using a current of four to five milliampères. Variot tattoos into the design a strong solution of tannic acid, and then rubs into the surface thus treated nitrate of silver stick; a black eschar is formed, which falls in a week or two, removing the pigment. Brault pricks into the skin a strong solution of zinc chloride, thirty parts in forty of water; this produces a moderate inflammatory reaction with the formation of a crust, which falls after some days, leaving only a slight scar, unless the needle has been introduced too deeply. Ohmann-Dumesnil tattoos in glycerol of papoid or of caroid in a similar manner. Recently Dubreuilh has recommended shaving off the pigmented area with a razor and applying to the denuded surface Thiersch grafts. Stelwagon has recently employed with moderate success, when the pigment is not too deep, freezing with carbon dioxide snow.

A blue pigmentation is frequently produced by explosions of gunpowder which drive unburned powder grains into the skin; a similar discoloration is common in coal-miners as the result of the introduction of small particles of coal through wounds and abrasions. The removal of such pigmentation is only practicable when the area involved is limited, and the same methods are applicable as in tattooing.

A slate-colored discoloration of the skin is occasionally observed in morphine and cocaine *habitués,* usually on the arms, who use these drugs hypodermatically, the discoloration being produced by metallic salts resulting from corrosion of the needle. In a morphine *habitué* seen by the author some little time ago, both upper arms were covered with a mottled bluish discoloration with innumerable punctate scars produced by the needle of the syringe.

TINEA VERSICOLOR

Synonyms.—Pityriasis versicolor; Chromophytosis; Dermatomycosis furfuracea; Fr., Pityriasis versicolore; Ger., Kleienflechte.

Definition.—Tinea versicolor is a parasitic disease of the skin due to the invasion of the upper layers of the epidermis by a fungus, and is characterized by non-elevated, slightly scaly patches of varying shades of brown.

Symptoms.—It begins with the appearance of small yellowish-brown macules, situated for the most part about the mouths of the follicles, which slowly enlarge until by the coalescence of the smaller patches a diffuse sheet of discoloration is produced, about the well-defined borders of which are numerous outlying small patches. There is usually a slight, but easily perceptible, amount of scaling except in those with moist or greasy skins, but even in these light scratching with the finger-nail readily loosens the superficial horny layer, which comes off in bran-like scales. The color of the patches varies from a chamois to a dark-brown; in exceptional cases they may be quite black. Occasionally the color is a yellowish-pink owing to the presence of a slight hyperæmia. In the dark-skinned races the color of the diseased skin, instead of being darker than normal, is lighter; in the negro the patches are frequently an ashy gray.

The disease is in the great majority of cases confined to the covered parts of the body, chiefly the upper portion of the trunk, front and back, and the upper arm (Fig. 177). It commonly begins over the sternum and beneath the clavicles anteriorly and over the scapulæ posteriorly, spreading thence to other portions of the trunk. Not infrequently it begins in the pubic region and groins as quite small, round, brown macules with a hair in the centre, showing but little tendency to coalesce into sheets as upon the chest. In rare instances the uncovered parts, such as the neck, face, and hands, may be affected.

The extent of surface involved varies greatly; there may be but a few coin-sized patches upon the chest and back, or the greater part

FIG. 177.—Tinea versicolor.

of the trunk and arms may be covered, and in exceptional cases it may extend downward upon the thighs as far as the knees.

The course of the malady is a very chronic one. It usually spreads slowly and lasts, as a rule, for an indefinite period unless removed by treatment.

Subjective symptoms are, as a rule, absent; there may, however, be slight itching, especially in those cases in which there is some hyperæmia, but rarely enough to occasion the patient any real annoyance.

Tinea versicolor is very common in the tropics, where it is apt to exhibit features not seen in the temperate zones. Castellani has described several varieties of the tropical forms, to the two most important of which, seen in Ceylon and India, he has given the names *pityriasis versicolor flava* and *pityriasis versicolor nigra*. In the former, which, unlike the European variety, occurs commonly upon the face as well as the trunk, the patches vary in color from a canary-yellow to a deep orange-yellow; in the latter they are of a dull black color and seldom occur upon the face. Both are, as a rule, seen only in natives, although Europeans are not entirely immune.

The affection is rarely seen in children, and is infrequent in the old, its greatest incidence being between twenty and forty. It is only very feebly contagious; examples of its transmission even to those in frequent contact with those who have it are decidedly uncommon. It is apparently more frequent in those whose nutrition is much below par than in individuals in good health, although it is often observed in the robust; it is frequently seen upon the chests of those with pulmonary tuberculosis; indeed, Daguet and Hericourt thought the fungus of tinea versicolor produced pulmonary phthisis, an opinion which altogether lacks confirmation.

Etiology and Pathology.—Tinea versicolor is due to a parasitic fungus, the *Microsporon furfur* (Fig. 178), discovered by Eichstedt in 1846. The fungus is composed of rather short, irregularly septate, curved, and bent mycelial tubes and spores, the latter arranged in small masses or groups. The mycelia have an average diameter of 3 microns, while the spores, which are round and of unequal size, vary from 2 to 5 microns in diameter. The fungus is found in the horny layers of the epidermis, where it exists in great abundance, and in the follicles of the lanugo hairs. Most authors assert that the latter are not invaded, but in sections made from a patch on the back we found numerous spores far down on the walls of a follicle of a lanugo hair which by good fortune we had cut throughout its length. Cultivation does not readily succeed, but Spietschka, Matzenauer, Gastou and Nicolau, and others have grown it on various media.

In pityriasis versicolor flava an organism which has been named *Microsporon tropicum* by Castellani is present. The mycelial tubes of this organism are comparatively thick and show numerous swellings and constrictions, while the spores are somewhat larger than

those of the *Microsporon furfur,* 3.50 to 4.50 microns in diameter. Cultivation of this organism has not yet succeeded. Pityriasis versicolor nigra is due to a fungus, the *Microsporon Mansoni,* a name likewise given it by Castellani. The mycelia of this fungus, as to size, are much like those of the *Microsporon furfur,* but contain an abundance of dark pigment; the spores are much larger, from 5 to 7.50 microns in diameter. On maltose agar this organism grows rather rapidly, producing hemispherical black colonies.

According to Unna, who regards the *M. furfur* as a saprophyte, the cells of the middle and upper layers of the stratum corneum swell up under the action of the fungus and are loosened from the lowest

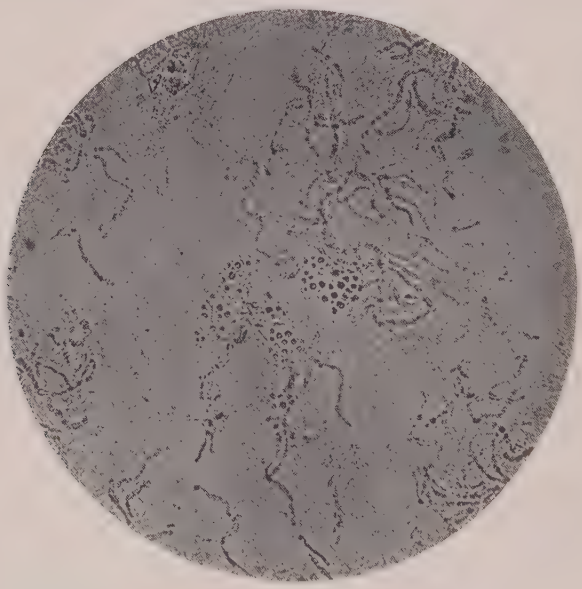


Fig. 178.—Microsporon furfur.

layer, thus giving rise to the slight desquamation which usually accompanies the disease. No other structural alterations occur in most cases, although Waelsch found a moderate hyperæmia of the superficial capillaries, with slight exudation about them in the papillæ, especially where the fungus is most abundant.

Diagnosis.—The yellowish-brown color, the slight branny desquamation, the limitation of the discoloration to the covered parts of the skin, and the absence of all inflammatory symptoms distinguish it from those affections with which it is most likely to be confounded, such as chloasma, seborrhœic dermatitis, and pityriasis rosea. In chloasma, which is far more frequent in women than in men, and is situated as a rule upon the face, there is no desquamation and the pigmentation is in, not on, the skin. In seborrhœic dermatitis and in pityriasis rosea there is always more or less inflammation, and the

latter runs an acute course. The microscopic examination of scrapings from the skin will readily resolve doubtful cases, since the fungus is easily demonstrated when present.

In making this examination a small quantity of the scales is placed upon a slide with a drop of liquor potassæ and covered with a coverglass just as in examining scales for the ringworm fungus.

Treatment.—An altogether satisfactory method of treatment is to thoroughly mop the patches night and morning with a solution of sodium hyposulphite in water, one drachm (4.0) to the ounce (32.0), with a half drachm (2.0) of glycerin in each ounce (32.0) of solution, allowing the solution to dry on; every four or five days the patches should be thoroughly scrubbed with tincture of green soap and hot water, or with some one of the many sulphur soaps which are to be found in the market. The treatment should be continued until every trace of the disease has disappeared. The effectiveness of this solution is somewhat increased by following its application immediately with very dilute acetic acid, which by decomposing the hyposulphite sets free nascent sulphurous acid. An ointment of precipitated sulphur, one drachm (4.0) to the ounce (32.0), well rubbed in once a day, or tincture of iodine painted over the patches every day or two, is likewise an efficient application. During the treatment the underclothing should be thoroughly disinfected by boiling or dry heat to prevent reinfection.

While the disease is readily cured by any one of a number of parasiticide ointments and lotions, relapses are frequent, probably because the remedies do not always reach the fungus in the follicles.

CHAPTER XV

NEW GROWTHS—NEOPLASMATA

EPITHELIOMA (MOLLUSCUM) CONTAGIOSUM

Synonyms.—Molluscum contagiosum; Molluscum epitheliale; Molluscum sebaceum; Acne varioliformis (Bazin).

Definition.—A contagious epithelial neoplasm distinguished by small tumors the color of the normal skin, or less frequently pink or red, with a small central opening.

This infrequent and comparatively trivial affection, which was first described by Bateman, who gave it one of the names by which it is best known, *molluscum contagiosum,* has attracted an amount of attention apparently out of all proportion to its importance, largely, no doubt, because it is one of the very few examples known of a contagious new-growth.

Symptoms.—The tumors which characterize the affection are usually quite small, varying in size from a large pin-head to a pea, are most frequently the color of the skin, but often become pinkish or bright red as they increase in size, are as a rule sessile, but occasionally pedunculated, and in most instances have a small depressed opening in the centre (Fig. 179). They are quite solid, and when firmly pressed between the thumb and finger a white cheesy material escapes from the central opening; occasionally this material is extruded spontaneously in the shape of a small soft spine. In the majority of cases they are situated on the face, often about the eyelids, and upon and in the neighborhood of the genitalia, but they may be found anywhere upon the skin, although very rarely upon the palms and soles. While the above regions are those in which the tumors are most frequently situated, they are occasionally limited to the trunk, as in a very extensive epidemic observed by the author a few years ago. In this epidemic the face was in almost every instance free, although there were scores and hundreds upon the trunk (Fig. 180). The number is commonly small, varying from one or two to a half-dozen or a dozen, but, as noted above, they may be very numerous. Usually discrete, occasionally several coalesce, and in rare instances plaques of considerable size may be formed. Not very infrequently the lesions are arranged linearly as the result of the infection of a superficial scratch (Fig. 181).

In a considerable number of cases as the lesions increase in size they become inflamed, suppurate, and are thus destroyed. While they seldom reach a size much beyond that of a large pea, instances have been observed in which they attained the size of a small orange or of the fist (Laache, Walter Smith). In most cases there are no subjective symptoms, but occasionally there is itching, which may be quite severe, as in the epidemic already alluded to. The duration of

the lesions is somewhat indefinite; very commonly they last for several months, but they may remain without much change for a year, as in a case under the author's observation, or even for several or many years in rare instances.

In a few cases tumors have been seen upon mucous membranes. Abrahams observed a case in which, in addition to numerous lesions upon the skin, there was a white patch upon the tongue resembling

FIG. 179.—Epithelioma (molluscum) contagiosum.

leucoplakia, in which "molluscum bodies" were found, and the author has recently seen a persistent *folliculosis* of the lower lid which was almost certainly due to this infection, since it was associated with a small tumor on the edge of the lid.

Etiology.—The malady is much more frequent in children than in adults, and is in many cases acquired through the bath, especially the Turkish bath, and through the use of infected towels and other articles of the toilet. In a limited number of cases it is due to direct contact with an affected individual, as when it is transmitted to the

breast of a mother by her nursing infant with lesions on the face. A remarkable example of direct infection by a surgeon with tumors on the hand has been reported recently by Paton, the operation wound having been thus infected in seven cases; tumors appeared in the scar or its neighborhood after an incubation period of several months. The occurrence of a similar disease in animals, and especially in do-

Fig. 180.—Epithelioma (molluscum) contagiosum. Lesions unusually abundant and accompanied by severe itching. One of several hundred cases occurring in an institution for young men.

mestic fowls and birds such as the pigeon, has been well established, and a few authentic instances are on record in which the affection has been transmitted from these to human subjects. Sir Jonathan Hutchinson observed a case in a young woman which was traced to a pet dog, the nature of the tumors in the dog having been established by microscopic examination; Salzer has reported one contracted from a diseased pigeon, and Jurgens acquired a tumor on the thumb as the result of accidental inoculation with the avian disease.

Pathology.—The well-established occurrence of the malady in epidemics, especially in institutions for children, its occasional accidental inoculation, and particularly the successful experimental inoculations of Retzius, Pautry (a pupil of Vidal), Haab, Pick, and a number of other experimenters, furnish incontrovertible proof of its infectious nature. The infecting agent, however, has as yet escaped detection. Neisser regards the so-called "molluscum bodies" as protozoan organisms and the cause of the disease, but these have been

FIG. 181.—Epithelioma (molluscum) contagiosum. Note linear arrangement on chest where infection occurred in scratch.

quite definitely proven to be degenerated epithelial cells. Juliusberg has apparently demonstrated that the virus is a filterable one; and quite recently Lipschütz has described a very minute organism which he has found in the degenerated epithelial cells of the tumor, for which he has proposed the name *Strongyloplasma hominis,* which he believes to be the infecting agent. As the tumors are frequently seen in the region of the genitalia in association with pediculosis pubis, Ehrmann has suggested the possibility that the pediculus serves as the intermediate host for the infecting organism. The incubation period of the infection varies from eight or ten weeks to three or four months

or more, the shorter period having been observed in the experimental inoculations.

The tumors are epithelial neoplasmata, having their origin in the rete. They are surrounded by a narrow fibrous capsule and are composed of a variable number of oval or pyriform lobules made up of epithelial cells, separated by thin fibrous septa, which open into a central cavity opening upon the surface (Fig. 182). The cells in the

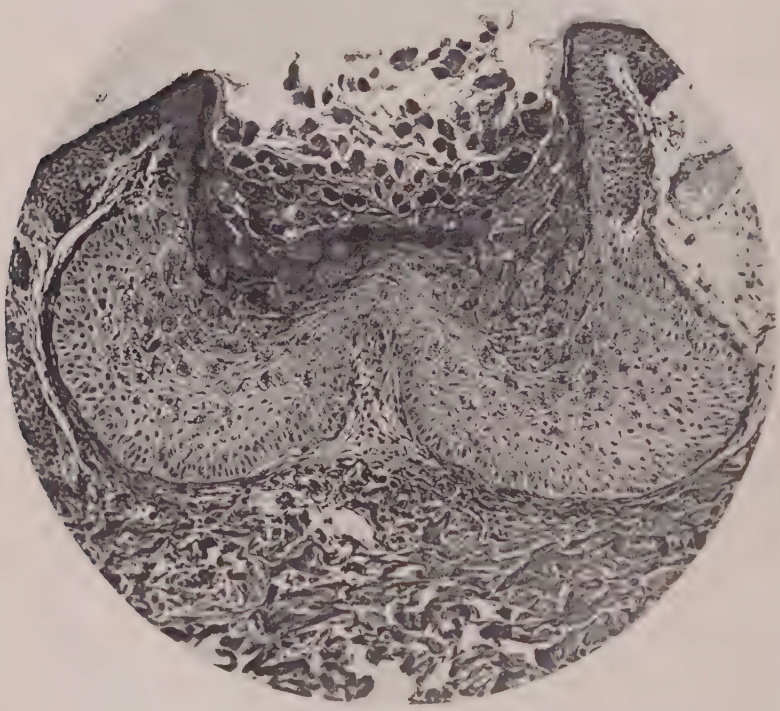


Fig. 182.—Epithelioma (molluscum) contagiosum. Section of a two-lobed tumor.

periphery of the lobules are of the type found in the basal-cell layer of the rete, while those more centrally situated are oval, and many of them exhibit a peculiar form of degeneration, the so-called "molluscum bodies" or "molluscum corpuscles" (Fig. 183). Three varieties of degenerated cell may be distinguished: First and most numerous, large round bodies with double-contoured walls and granular segmented contents, in which the nucleus is eccentric (Figs. 184 and 185) much distorted and frequently flattened out against the inner wall of the cell; second, oval cells lying in the midst of normal epithelium, with thick laminated walls, filled with a felt-like mass of fine short fibres and with a nucleus lying in a cavity at one pole of the cell; and, third, completely degenerated cells which appear as oval, deeply stained, struc-

tureless bodies. In a somewhat extensive study made by the author a few years ago, a previously undescribed form of cell was seen in small numbers. This cell was much smaller than those above described, was perfectly oval in shape, had a double wall, was filled with a mass of fine fibrils and was without a nucleus. The nature of the degeneration of the epithelium is still a matter of debate. Unna believes it a colloid or hyaline alteration, but White is quite convinced that it is an extraordinary metamorphosis of rete cells into keratin.

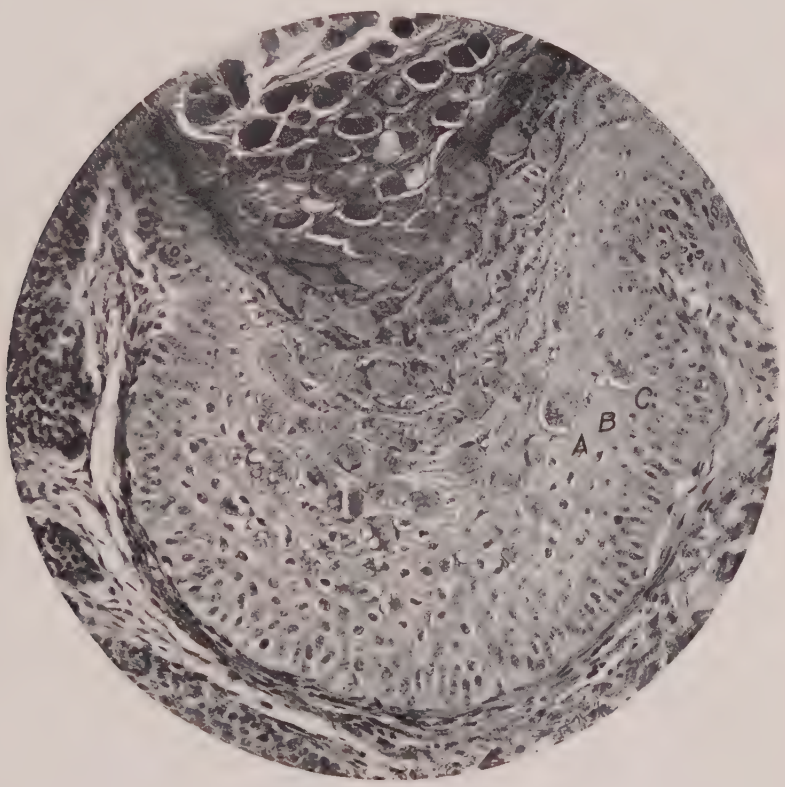


FIG. 183.—Epithelioma (molluscum) contagiosum. A single lobule of tumor; "molluscum bodies" at *A*, *B*, *C*.

Diagnosis.—The little tumors are usually so characteristic in appearance that the affection is readily recognized; it is only when it departs from the ordinary type that errors are likely to occur. When the lesions are red or inflamed and situated upon the upper part of the trunk, with a very small central opening, they may be mistaken on a cursory examination for the papules of acne, but a close examination and the presence of other characteristic tumors will disclose their true nature.

When situated upon the genitalia, they are sometimes regarded

by the inexperienced as syphilitic, most frequently as condylomata, but even a cursory examination will distinguish them from these lesions. When solitary the larger tumors may resemble epithelioma of the rodent ulcer type, as in a case observed by Pringle and in one under the author's care; in the latter in which the lesion was situated upon the forehead of an elderly woman and was of a year's duration, the error in diagnosis was only discovered by the microscopic examination of the sections made from the excised tumor.

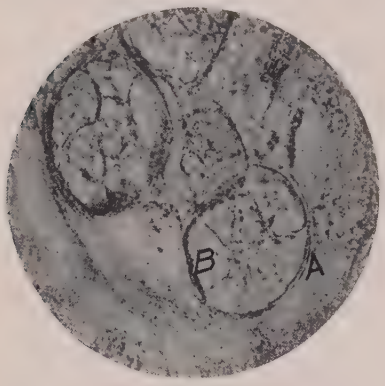


FIG. 184.—"Molluscum bodies." *A*, double wall surrounding the cell; *B*, nucleus of the cell flattened against the cell-wall.

Prognosis.—The affection is usually a trivial one, and responds readily to treatment. As has already been observed, a considerable number of the tumors disappear spontaneously, usually with symptoms of inflammation.

Treatment.—An effective method of treatment is incision with a small bistoury or tenotome, and expression of the contents. Pure carbolic acid applied with a needle, or with a small pointed stick, such as a wooden

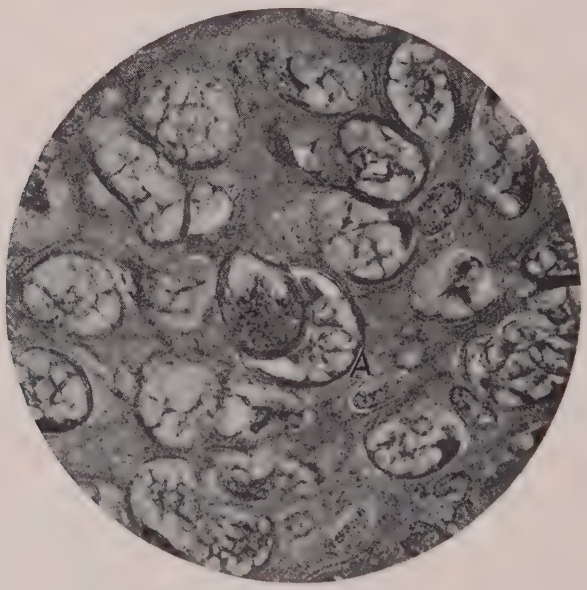


FIG. 185.—Epithelioma (molluscum) contagiosum. *A*, large "molluscum body" in which is a second.

tooth-pick, which should be bored into the central opening, will likewise cause their disappearance. The larger growths, particularly the pedunculated ones, may be snipped off with a pair of scissors. When the lesions are numerous or are limited to a small region, Stelwagon has found a

parasiticide ointment, one containing ammoniated mercury or sulphur, twenty to forty grains (1.35 to 2.65) to the ounce (32), effective. As a prophylactic measure, particular attention should be paid to the bath and the towels, which are frequently a source of contagion.

TRICHOEPITHELIOMA

Synonyms.—Trichoepithelioma papulosum multiplex; Epithelioma adenoides cysticum; Benign cystic epithelioma.

Definition.—A benign epithelial new growth having its origin in the hair-follicles, distinguished by shot- to pea-sized tumors situated in most instances upon the face.

Under the name *epithelioma adenoides cysticum,* Brooke, in 1892, reported four cases of a small epithelial neoplasm situated in the face, which he believed identical with the affection described five years before by Jacquet and Darrier as a sweat-gland adenoma (*hydradenomes eruptifs*), but which Jacquet later proposed to call benign cystic epithelioma (*epithéliome kystique bénin*), having failed to demonstrate its relationship with the sweat-glands. About the same time Fordyce reported two cases of a similar kind. Somewhat later Jarisch proposed to call the neoplasm *trichoepithelioma papulosum multiplex,* because of its demonstrable origin in the hair-follicles, a name which seems to the author the most appropriate of the many proposed for the affection.

Symptoms.—The affection is distinguished by small nodules varying in size from a hemp-seed to a pea, rarely larger, yellowish, yellowish-pink, sometimes differing but little from the color of the normal skin, situated for the most part upon the forehead, temples, root of the nose, lids, less frequently upon the lower part of the face, and exceptionally upon the upper and anterior part of the trunk (Fig. 186). Many of the lesions are quite translucent, looking not unlike vesicles, but puncture shows them to be solid; a considerable number show whitish points looking like milia, others have blackish or slate-colored dots in their centres which are small tufts of vessels in the interior of the nodule; occasionally the larger ones have a few fine arborescent capillaries coursing over their surface. The number of lesions varies from two or three to scores; they are usually discrete, but sometimes are arranged in small coalescent groups of two or three. They usually appear first in childhood or youth and new nodules continue to appear from time to time for some years. They at first slowly increase in size, then become stationary and remain with little or no change for an indefinite time. Occasionally, however, ulceration of one or more of the lesions occurs, examples of this having been observed by Hallopeau, White, Jarisch, Stelwagon, and the author.

Etiology.—Its cause is unknown. It is more frequent in women than in men, and begins as a rule in childhood or early adult life, but is not confined to this period. In many instances it is apparently hereditary, occurring in several members of the same family, as in the cases reported by Brooke and Fordyce.

Pathology.—It is an epithelial new-growth, pursuing, as a rule, a benign course, but, as already noted, it at times undergoes ulceration and shows a tendency to recurrence after removal, as was observed in a case under my care some years ago.

The neoplasm occupies the corium, but little change taking place in the epidermis. It is made up of numerous round, oval, and irregular, sometimes branching, masses of epithelial cells of the columnar type in which are variously sized cyst-like cavities containing granular débris

Fig. 186.—Trichoepithelioma (benign cystic epithelioma).

(Fig. 187). About the borders of these masses the cells are frequently arranged radially, presenting a palisade-like appearance as described by Brooke. In places these epithelial masses seem to be connected with the basal layer of the overlying epidermis, but this is a simple fusion of the upward growing mass with the epidermis and not a downgrowth of the basal layer. When followed in a series of sections the connection of the neoplasm with, and its origin in, the hair-follicles can usually be demonstrated.

Diagnosis.—The affection may be mistaken for syringocystoma, for hidrocystoma, and for adenoma sebaceum. The first of these is situated as a rule upon the trunk, the nodules are usually larger and not translucent like those of trichoepithelioma; at times, however, a biopsy may be necessary to make a positive differential diagnosis. The lesions of hidrocystoma are much more transparent than those of trichoepithelioma and contain fluid. Adenoma sebaceum is limited to

the face, occurs in very early life, is frequently of a red or brown-red color, and the lesions are opaque.

Treatment.—The lesions, when not too numerous, may be removed by excision, by curettement, by freezing with solid carbon dioxide. In one case under the author's care many of the nodules disappeared under X-ray treatment.

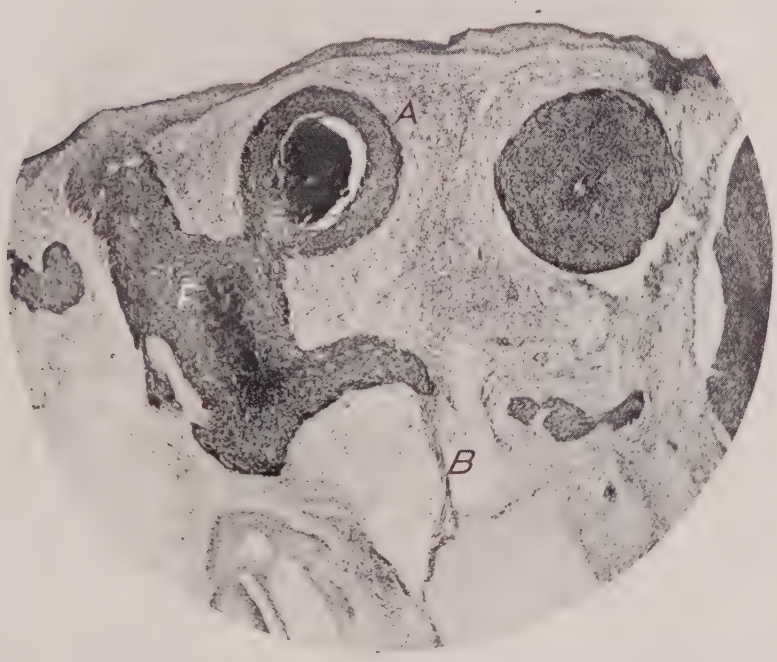


FIG. 187.—Trichoepithelioma. *A*, cystic area of columnar epithelium having its origin from the greatly enlarged and distorted hair-follicle, *F*, to which is attached the erector pili muscle, *B*.

SYRINGOCYSTOMA

Synonyms.—Hydradenomes eruptifs; Syringocystadenoma; Epitheliome kystique bénin; Hæmangioendothelioma tuberosum multiplex; Lymphangioma tuberosum multiplex; Nævus cystepitheliomatosus.

In 1887 Jacquet and Darrier described an affection of the skin consisting of numbers of discrete papules and tubercles situated on the anterior and upper surface of the trunk and on the inner surface of the arms to which they gave the name *hydradenomes eruptifs,* believing it to be a neoplasm connected with the sweat-glands; but some time later Jacquet proposed to call it benign cystic epithelioma (*epitheliome kystique bénin*) since he had failed to establish its relationship to the

sudoriparous apparatus. A small number of similar cases have since been reported under a variety of names, most of which indicate the reporters' belief in the origin of the neoplasm in some part, usually the duct, of the sweat-glands.

Symptoms.—This rare malady (which is identical with the affection described years ago by Kaposi as *lymphangioma tuberosum multiplex*) is characterized by numbers of pin-head to split-pea-sized, slightly elevated, flat, pinkish and yellowish, occasionally brownish, opaque

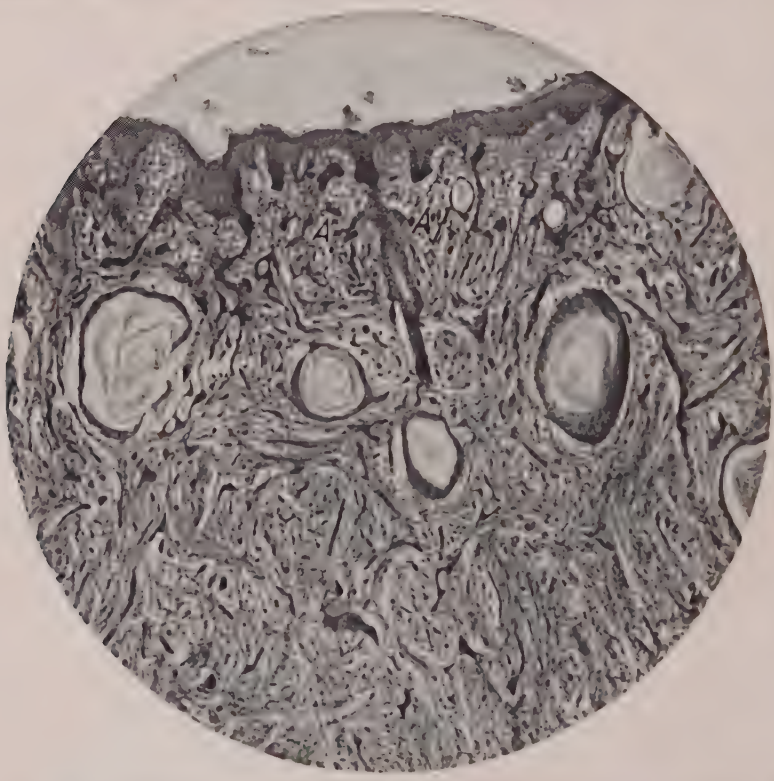


FIG. 188.—Syringocystoma. The author believes syringocystoma to be only a variant of trichoepithelioma, the duct-like epithelial tracts originating in lateral off-shoots, A, A, of the hair-follicle. Note numerous long, branching tracts of columnar epithelium and numerous cysts.

nodules situated in most instances upon the chest and upper extremities, much less frequently in other regions, such as the face. These are usually present in considerable numbers and are unattended by any subjective symptoms. The patients, as a rule, are young adults and in most cases women. The disease pursues an indefinite course, usually lasting for years, with practically no change in the appearance of the nodules when once fully developed.

Etiology.—Nothing whatever is known about the causation of the affection.

Pathology.—By most authors it is regarded as an epithelial neo-

plasm, having its origin in the ducts of the sweat-glands. Jarisch, Walters and others, however, consider it an endothelioma originating in the endothelium of the blood-vessels. Gassmann and Winkler look upon it as a variety of nævus and have given it a name indicative of this view, viz., *nævus epitheliomatosus*.

The author on several occasions has expressed the opinion, which he still holds, that it is an epithelial new-growth which has its origin in the slender lateral offshoots often normally present in the lanugo follicles; in other words, it is a variety of trichoepithelioma. The nodules are composed of numerous straight and branching slender tracts of epithelial cells of the columnar type (Fig. 188) situated in the corium, and round or oval cysts with epithelial walls filled with hyaline material

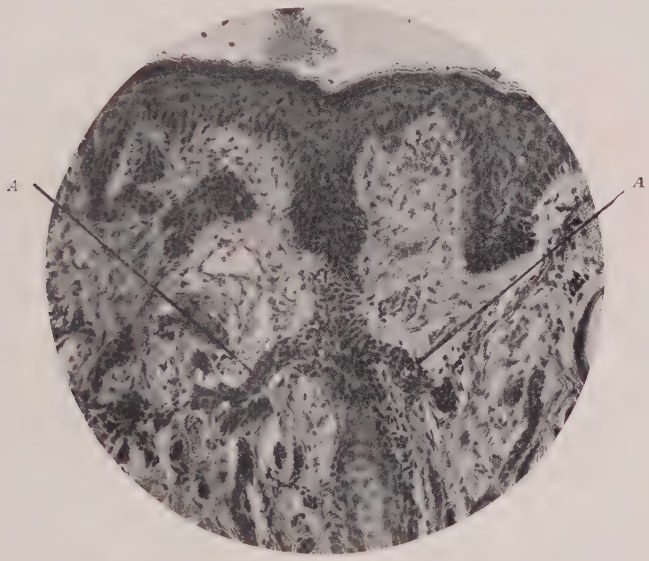


Fig. 180.—So-called syringocystoma. *A*, duct-like tracts of cylindrical-celled epithelium growing from lateral portion of hair-follicle.

frequently presenting a laminated arrangement. The epithelial tracts are usually quite narrow, often not more than two or three rows of cells wide, recalling in appearance the ducts of the sweat-glands, but without a lumen. The cysts, which are frequently of considerable size, are sometimes connected with the epithelial tracts; occasionally they are situated within the follicles. In a case which I had the opportunity to study some years ago, the slender, duct-like tracts of epithelium could be definitely traced to the lanugo follicles and their origin from the lateral epithelial spurs of these clearly demonstrated (Fig. 189). Actual connection of the neoplasm with the sweat-gland ducts was not established in any of the published cases, but was inferred from the somewhat duct-like arrangement of the growth.

Diagnosis.—The diseases for which syringocystoma may be mis-

taken are trichoepithelioma (benign cystic epithelioma) and xanthoma. Trichoepithelioma is situated in most cases upon the face, while syringocystoma occurs upon the trunk; the nodules of the former are usually more or less translucent, while those of the latter are opaque. In xanthoma, which it may at times resemble, the nodules are, as a rule, much more widely distributed, and are of a very decided yellow color.

Treatment.—The lesions may be destroyed by electrolysis, by caustics, preferably trichloracetic acid, and by freezing with carbon dioxide "snow." In a few cases the X-ray has been used successfully.

ENDOTHELIOMA CUTIS

Synonyms.—Sarcoma capitis; Endothelioma capitis; Multiple benign epithelioma of the scalp; Turban tumors.

Symptoms.—According to Crocker, the first recorded case of this affection was observed by Morrant Baker, who described it as "withering sarcoma of the scalp." Some twelve or fourteen cases have been reported by Poncet, Kaposi, Spiegler, Ancell, Cohn, Barret, and Dubreuilh and Auche, the last-named describing their case as benign epthelioma of the scalp.

It occurs as multiple tumors situated upon the scalp, varying in size from a pea to an orange, pale, dark-red or violaceous in color, sessile or pedunculated. They are smooth, hairless, and vary in numbers from a half-dozen to scores, in the latter case forming a bosselated, turban-like mass covering the entire scalp. When the number is large, the surfaces in contact are moist, the epidermis macerated, with occasional superficial ulceration attended by the discharge of a fetid fluid. Occasionally a few similar, but usually much smaller, tumors are also found upon the face, neck, and trunk. The disease lasts indefinitely, the tumors slowly increasing in size and numbers, without affecting the patient's general condition.

Etiology.—The great majority of the cases thus far observed have occurred in women, according to Dubreuilh and Auche, 12 out of 14; and in a considerable proportion an injury of some sort preceded the appearance of the tumors. In a relatively large number it was noted in several members of the same family and in two or three successive generations.

Pathology.—The nature of the neoplasm is still a matter of some uncertainty. As already noted, the earlier cases were regarded as a form of sarcoma, but this view is no longer entertained. In its prolonged and benign course and in its histopathology it is quite unlike any of the varieties of that neoplasm. Most recent authors agree with Spiegler in classifying it as an endothelioma. Quite recently, however, Dubreuilh and Auche, who have studied its histopathology with great care and minute detail, expressed the opinion that it is a variety of multiple benign epithelioma having its origin in the epidermis and,

perhaps the hair-follicles, and resembling much, in the character of the cells which compose it, rodent ulcer.

According to Spiegler, the tumor is composed of branching and intersecting cylindrical tracts of cells resembling small epithelial cells occupying the derma. About the margin of these tracts, which are surrounded by a fine fibrous capsule and contain numerous small round and oval masses of hyaline material, the cells are of the columnar type and are arranged radially, while those in the interior are round or polygonal.

Treatment.—The only effective treatment is the removal of the tumors surgically. Possibly the prolonged and careful use of the X-ray or of radium might be of service.

ADENOMA SEBACEUM

Synonyms.—Vegetations vasculaires (Rayer); Nævi vasculaires et papillaires (Vidal); Adénomes sébacés (Balzer et Menetrier).

Definition.—A small tumor composed of sebaceous-gland tissue, probably congenital in origin, situated for the most part in the face.

First described by Rayer, Addison, and Gull (Crocker), who, however, did not recognize its nature, it was later described by Balzer in connection with Menetrier and Grandhomme, who gave it the name *sebaceous adenoma*. A limited number of cases have since been reported by other observers (Pringle, Caspary, Crocker, and others). It is quite certain, however, that not all the cases reported under this or similar titles represent the same affection, some of them being without doubt examples of trichoepithelioma (epithelioma adenoides cysticum, benign cystic epithelioma).

Symptoms.—The tumors vary in size from a millet seed to a hemp seed, and occasionally reach the size of a small pea, the larger ones presenting at times a verrucous appearance. They may be the color of the normal skin, yellowish, or, what is commonly the case, a bright red, owing to the presence of minute capilliaries over and around them. They usually occur in considerable numbers, often closely crowded together, chiefly upon the nose, especially the alæ, upon the cheeks adjoining, in smaller numbers at the root of the nose, on the forehead and upper lip, and exceptionally as isolated lesions upon the neck and in the scalp. They are in most cases symmetrically distributed on both sides of the nose and on both cheeks, but they may be asymmetrically arranged, as in the cases reported by Crocker and Pollitzer. Telangiectases, vascular and pigmented nævi, and soft fibromata situated on various parts of the body are frequently associated with them.

Etiology.—The congenital origin of the tumors is quite generally accepted, although they may not appear until puberty or even considerably later. In the majority of cases they are first noticed in early childhood, and exceptionally a few lesions may be present at birth. There is commonly a decided increase in their number about the time of puberty. A very considerable proportion of the cases occur in

those who show more or less marked signs of arrested mental development, in epileptics and imbeciles, Crocker and Colcott Fox stating that the affection is not at all uncommon in idiot asylums in England; there are notable exceptions, however, to this rule.

Pathology.—Sebaceous adenoma is a hyperplasia of the sebaceous glands. Pringle found but little change in the epidermis beyond a lengthening of the interpapillary processes of the rete and a corresponding increase in the size of the papillæ of the corium. The chief change consisted in "an enormous increase in the number and com-

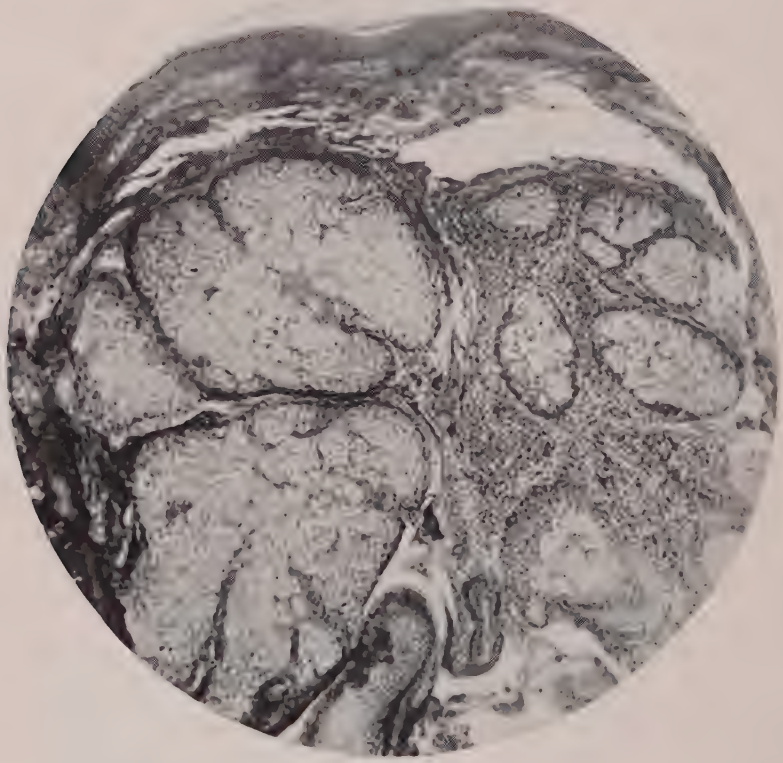


FIG. 190.—Adenoma sebaceum.

plexity of the sebaceous glands" (Fig. 190). Balzer thought that some of the tumors in one of his cases had their origin in the sweat glands, but, as Unna has pointed out, this case was almost certainly not adenoma sebaceum, but benign cystic epithelioma (epithelioma adenoides cysticum, Brooke). Crocker, believing all the appendages of the skin involved, regarded it as a "pilosebaceous hidradenoma."

Diagnosis.—The affection with which it is most likely to be confounded is trichoepithelioma (benign cystic epithelioma), but its earlier appearance, its decided predilection for the nose, the red color of the tumors, and the absence of ulceration which occurs in a certain pro-

portion of cases of the latter sooner or later, will serve to distinguish it from that disease. When the lesions are few and of the color of the skin, the distinction certainly can only be made by biopsy.

Prognosis and Treatment.—The tumors are benign growths and after a certain period are likely to remain indefinitely with little alteration. Exceptionally some of the nodules undergo spontaneous involution, leaving superficial scars.

The larger lesions, when not too numerous, may be excised or removed by the curette, but in the majority of cases electrolysis is the most satisfactory method of treatment. A single puncture with a needle attached to the negative pole will usually destroy, in ten to twenty seconds, the small nodules; the larger ones may require two or three punctures.

LYMPHANGIOMA

Definition.—A new-growth composed chiefly of new-formed and enlarged lymphatic channels.

Under the term "lymphangioma" are included a number of new-growths which differ a good deal in their clinical features. They may occur as well-defined tumors, or, more frequently, as ill-defined diffuse enlargements. All varieties are infrequent, and the tumor forms are decidedly rare and usually concern the surgeon much more than the dermatologist.

LYMPHANGIOMA CIRCUMSCRIPTUM

Synonyms.—Lymphangiectodes (Tilbury Fox); Lupus lymphaticus (Hutchinson); Lymphangioma cavernosum; Lymphangioma capillaire varicosum; Lymphangioma superficiale simplex (Unna).

Definition.—A disease of the superficial lymphatics characterized by patches of non-inflammatory vesicles.

Symptoms.—This affection, which was first described by Tilbury Fox under the name *lymphangiectodes*, is decidedly uncommon. It occurs as one or more patches, usually a single patch, of deep-seated, thick-walled, usually discrete, but often closely aggregated vesicles with transparent contents and a lesser number of opaque, small, wart-like lesions. The patches vary in size from a coin to half the palm, are usually irregular in shape, and may contain from a dozen to fifty or more lesions. The greater number of the vesicles are pearly or bluish in color, but a variable number are red, or purplish, owing to the presence of minute tufts of blood-vessels in their interior; and some of the opaque lesions frequently have arborescent vessels over their surface. If punctured, a clear yellowish fluid escapes which may continue to flow for some hours, or in the cases of the larger lesions for several days. No subjective symptoms of any kind accompany the affection, but occasionally the patches are subject to repeated attacks of an erysipelatous or erysipelatoid inflammation. The malady pursues an extremely chronic course, lasting many years, the patch usually slowly enlarging by the addition of new lesions at its borders. Occa-

sionally the contents of some of the vesicles are absorbed and the lesions disappear, often leaving a faint scar and some pigmentation. In a case under the author's observation for some years the patch was situated above the spine of the scapula at first, but in the course of a year or two it had moved to the top of the shoulder, the vesicles on the lower side disappearing while new ones appeared at the upper margin, the site of the old lesions showing slight atrophy of the skin with faint pigmentation. The malady may occur on any portion of the body, but is most common in the region of the neck, the shoulders, and the axilla. In most cases the skin presents no other abnormality, but

FIG. 191.—Lymphangioma. Along with the vesicles on the thigh there was dilatation of the deep lymphatics and swelling of the whole extremity.

occasionally the lymphatic affection is associated with vascular nævi or varicose veins. In a few instances it has been seen upon the tongue, where it occurs as a patch of closely aggregated pin-head-sized to shot-sized translucent and opaque whitish or red vesicles situated either upon the dorsum or tip of the organ. As in the lesions upon the skin, the red color of some of the vesicles is due to the presence of vascular tufts in them. At the present time the author has under his observation a marked example of this form of the malady, the entire anterior third of the tongue being occupied by a wart-like mass of closely aggregated vesicles.

Etiology.—The affection in most instances begins in childhood, often within the first few months, and in a few cases it seems to have been

congenital; in the author's case above referred to, it was first noticed in the second or third month after birth. As already noted, it is sometimes associated with changes in the blood-vessels.

Pathology.—Formerly there was considerable difference of opinion as to whether the malady was a simple dilatation of preëxisting lymph channels or a formation of new ones, but the studies of Török have shown quite conclusively that both processes are present. Oval and irregularly shaped cavities (Fig. 192) are found in the papillary and subpapillary portions of the corium which are lined with endothelium

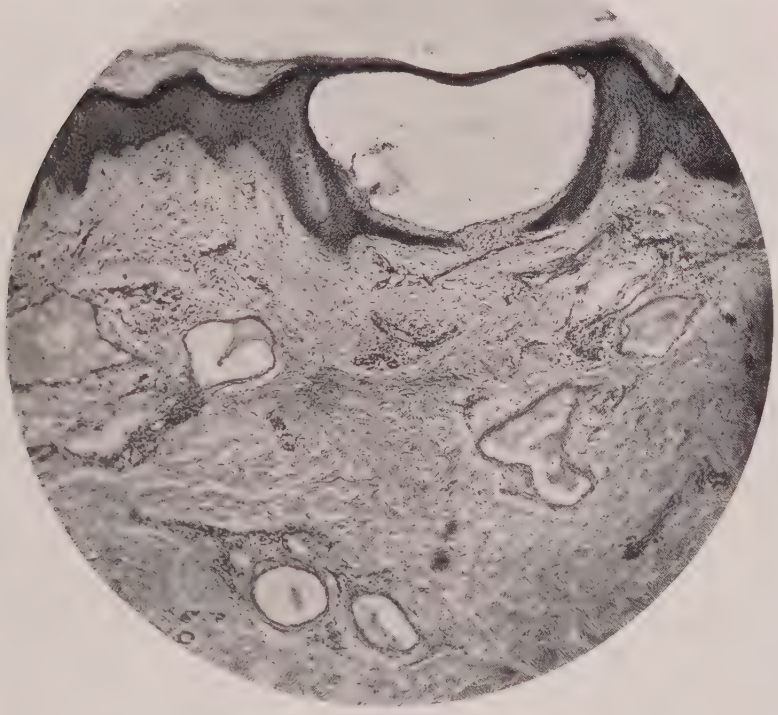


Fig. 192.—Lymphangioma circumscriptum.

and contain small quantities of coagulated lymph and a few leucocytes. Occasionally a moderate exudate of round cells is found about the margins of the more recent cavities. A variable number of dilated and new-formed capillaries are also present in the corium, and in certain cases the vascular element is quite pronounced (hæmolymphangioma).

Diagnosis.—The affection, although an uncommon one, usually presents such characteristic features that it is recognized without difficulty. The non-inflammatory character of the vesicles, many of which contain small tufts of vessels, plainly visible to the naked eye, giving them a red or purple color, the absence of any subjective symptoms,

and its occurrence for the most part in childhood are the features which distinguish it from other vesicular affections.

Prognosis.—The duration of the malady is indefinite and the patches usually slowly enlarge. As already observed, the malady is occasionally subject to repeated attacks of erysipelatoid inflammation.

Treatment.—When moderate in extent, the patch may be excised, but care should be taken to remove every portion of it, otherwise a recurrence is likely at the border of the scar; it may also be destroyed by caustics or by the galvanocautery. If the patch is small and the lesions few, it may be removed by electrolysis. The X-ray, however, is probably the remedy of choice, a number of instances of its successful employment having been reported (Engman and Mook, Ormsby, Dore, and the author).

Closely related to the foregoing in most of its clinical features is a variety of lymphangioma in which the cutaneous affection is associated with dilatation of the deep lymphatic channels, the *lymphangioma superficiale* of Unna. In this variety there are a variable number of deep-seated pin-head to pea-sized and occasionally considerably larger vesicles scattered irregularly over a swollen area, with or without more or less thickening of the skin. The regions most frequently affected are the lower extremity and the genitalia. In a case of this kind recently under the author's care the whole right thigh and leg were markedly swollen, and numerous pin-head to pea-sized vesicles were scattered over the inner surface of the thigh and down the leg, the latter having appeared some time after the swelling (Fig. 191). On several occasions the patient punctured some of the vesicles, and an abundant flow of lymph followed, which lasted for some days. When it occurs upon the vulva, there is usually a marked enlargement of the whole vulvar region, which is covered with numerous vesicles.

Dilatation of lymph channels, *lymphangiectasis,* occasionally occurs as a congenital affection, giving rise to diffuse swelling or enlargement of limited regions such as the lip (*macrocheilia*) or the tongue (*macroglossia*). In these, as in the affection already considered, there may be scattered vesicles of the type previously described, but usually in very much smaller numbers. It also occurs as an acquired affection, following injury (Elliot, Besnier), or repeated attacks of erysipelatous dermatitis, or infection (*filiariasis*), as in elephantiasis. In the last there is not only dilatation of the lymphatics, but more or less extensive hypertrophy of the hypoderm.

FIBROMA

Definition.—A benign new-growth composed of fibrous connective tissue, occurring as variously sized soft or hard tumors.

Two varieties of fibroma are recognized, soft fibroma (*fibroma molle*) and hard fibroma (*fibroma durum*), which differ considerably in their clinical aspects and in their histopathology. Both forms are infrequent, comprising, according to the statistics of the American

Dermatological Association, something less than one tenth of one per cent of all diseases of the skin. Of the two varieties the soft is much the more frequent.

FIBROMA MOLLUSCUM

Synonyms.—Molluscum fibrosum; Molluscum simplex; Molluscum pendulum; Soft fibroma; Neurofibroma; v. Recklinghausen's disease.

Symptoms.—This variety of fibroma is characterized by soft tumors

FIG. 193.—Fibroma molluscum.

varying in size from a small pea to an orange, or in exceptional cases as large as an infant's head (Fig. 193). The small ones are often quite deep-seated, hemispherical and sessile, while the larger ones are round, cylindrical, or pear-shaped, pendulous and frequently provided with a narrow pedicle. They are most frequently the color of the skin, but are often pinkish or bluish in their early stages and when old are apt

to be more or less pigmented. The skin over them is as a rule normal in appearance, but over the large tumors the mouths of the ducts of the sebaceous glands are often patulous and occasionally filled with plugs of sebum, forming comedones of unusual size. The number varies from a single one, which is unusual, to hundreds and even thousands, Hashimoto having observed a case in which there were 4500 (quoted by Joseph, Mraček's "Handbuch"); as a rule they exist in considerable numbers. While they may appear on any portion of the skin they are apt to be most abundant upon the trunk, more so upon the anterior than upon the posterior surface, are common on the scalp, less so upon the extremities, and rare upon the palms and soles. After reaching a certain size they may show but little change for an indefinite period, but in some of them the contents are gradually absorbed, so that after a time nothing is left but an apparently empty, flaccid sac. Occasionally as the consequence of pressure, friction, or other mechanical injury or as the result of overdistention from rapid growth, a tumor may inflame, ulcerate, or become gangrenous and be thus destroyed. Patches of pigment, varying in hue from a light sepia to black, for the most part small and freckle-like, but occasionally coin- to palm-sized, accompany the tumors in a certain proportion of cases; telangiectases and hairy nævi are likewise occasionally present. Instead of numerous small or moderate-sized tumors, there may be but one or a few large ones, forming pendulous masses, situated most frequently upon the scalp, sides of the neck, the axillæ, the buttocks, the thighs, or the labia (*fibroma pendulum*). At times these tumors occur as large pendulous folds of skin, a condition to which the term "dermatolysis" is sometimes improperly applied.

In rare cases tumors like those upon the skin are present upon the mucous membranes of the cheeks, the tongue, the palate, and the rectum.

The soft, small, flaccid tumors, usually with slender pedicle, common upon the trunk of elderly individuals, known as acrochordon, soft warts, "*verrues charnues*," are commonly regarded as a form of soft fibroma closely related to fibroma molluscum, if not identical with it, but these lesions are most probably soft nævi.

Fibroma durum, hard fibroma, desmoid, is a rare new-growth of the skin much less common than fibroma molluscum. It occurs as a small, very firm, deep-seated, usually solitary, but occasionally multiple hemispherical tumor, pink, or the color of the skin. It usually grows very slowly, seldom attains any considerable size, and after reaching a certain stage of development may remain without much change for an indefinite period. It is unaccompanied by any subjective symptoms.

Etiology.—As in a certain proportion of cases it, especially the soft form, has been observed in two or more successive generations and in several members of the same family (Virchow, Atkinson, Octerlony), it seems probable that heredity plays some rôle in its production. In the

majority of cases it begins in early childhood and may be congenital; exceptionally it does not appear until puberty or after, this being the case more particularly in fibroma pendulum. In a few instances traumatism seems to have been a predisposing factor (Taylor). Hebra called attention to the fact that it is frequently associated with defective bodily and mental development, an observation amply corroborated by subsequent observers, but there are numerous exceptions to this rule. Some years ago Brickner called attention to a variety to which he gave the name fibroma molluscum gravidarum, in which the tumors appeared only during pregnancy and disappeared upon its termination. Hirst has reported a case of this kind which the author had the opportunity of seeing in the University Hospital

Pathology.—According to von Recklinghausen, molluscum fibrosum is a neurofibromatosis, the tumors having their origin in the connective tissue of the sheaths of the nerves; with this view Unna, Darrier and other recent observers are in full accord. The epidermis shows no change beyond the disappearance of the interpapillary pegs of the rete, the result of the pressure from below of the growing tumor. The corium, except a narrow zone immediately beneath the epidermis, is entirely replaced by a finely fibrous tissue containing numerous nuclei. In the old lesions the centre of the tumor is quite compact, while the peripheral portion forms a loose, fibrous meshwork. Unna has called attention to a peculiar variety of "mastzell" present which is much larger than the ordinary variety and is surrounded by a wide, structureless halo. Elastic fibres are not present in the tumor, but are well maintained about its borders.

Hard fibroma is composed of bundles of collagenous tissue containing few cells, which cross one another at all angles. Very few vessels are present in the growth, and the elastic tissue has almost entirely disappeared.

Diagnosis.—The picture presented by the ordinary case of fibroma molluscum is so strikng that it is usually recognized at once. The tumors may at times be mistaken for lipoma, but this neoplasm is usually lobulated, elastic, never pedunculated, and seldom exists in such numbers as fibroma. The very small lesions may be mistaken for epithelioma (molluscum) contagiosum, but are readily distinguished from that affection by their softer consistency and by the absence of a central opening. From sarcomatosis the affection is to be distinguished by the much greater softness of the tumors and their benign course.

Prognosis.—The affection usually continues indefinitely, lasting during the patient's lifetime, but in the great majority of cases in no way impairing his general health. When the tumors are large and situated about the face, scalp, or the genitalia they may cause considerable disfigurement or inconvenience. As has already been noted, they may become inflamed and ulcerate, and in exceptional cases the ulceration

terminates in malignant disease. Garré asserts that at least twelve per cent. become sarcomatous.

Treatment.—Whitehouse has reported a case in which a considerable number of the tumors disappeared while the patient was taking arsenic, but as some of the tumors at times disappear spontaneously it may be doubted whether the improvement was due to the remedy. The tumors may be removed by excision, which is the method of choice when they are of large size, and by the galvanocautery loop, this last being a ready and effective method of disposing of those of moderate size with a pedicle. Care should be taken to remove the entire tumor, otherwise it is likely to return. When they are very numerous, only the largest or those which incommode the patient should be removed.

KELOID

Synonyms.—Cheloid; Keloid of Alibert; Fr., Cheloïde.

Definition.—A benign connective-tissue new-growth situated in the corium, characterized by smooth pink or red rounded or flat, frequently scar-like tumors, in most, if not in all, cases following traumatism.

Symptoms.—Alibert, who first gave the affection the name "keloid," divided it into two varieties—spontaneous or true keloid and cica-

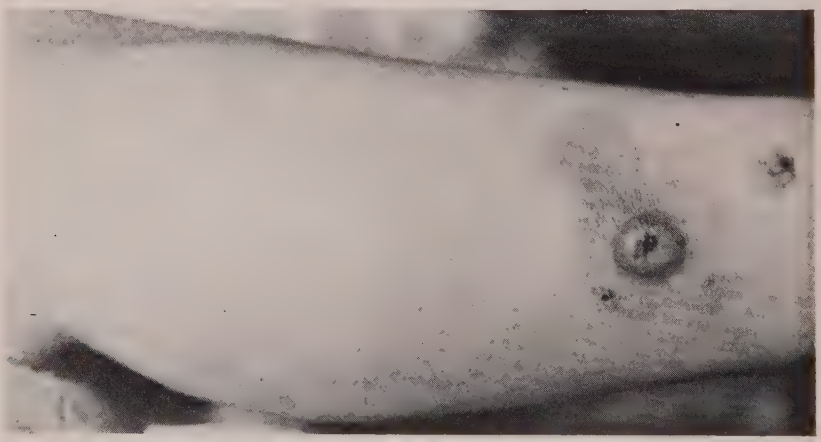


Fig. 194.—Keloid.

tricial or false keloid—a distinction still maintained by many authors, although it is extremely probable that there is no such thing as spontaneous keloid.

It usually begins as a small pinkish or red firm nodule rather deeply embedded in the skin, which slowly increases in size, forming a button-like, rounded tumor (Fig. 194) or more frequently an irregularly shaped, well-circumscribed, more or less elevated plaque with a number of claw-like processes extending from its borders, and it is to these that the affection owes its name "keloid" (from χηλή, a claw). In most instances the tumors are of moderate size, varying from a pea to a nut,

but occasionally they reach much more extensive proportions, as large as a small orange or as the fist or even larger. The surface is usually smooth, pink or red in color, sometimes violaceous owing to the presence of fine arborescent vessels. In many cases there are no subjective symptoms but not very infrequently the tumors are decidedly sensitive to pressure and in a few cases are the seat of more or less spontaneous pain, which may be severe enough at times to demand measures for its relief. The number of lesions is a variable one: often there is but a single tumor; not uncommonly they are multiple and exceptionally numerous (Fig. 195). When they are multple they sometimes exhibit

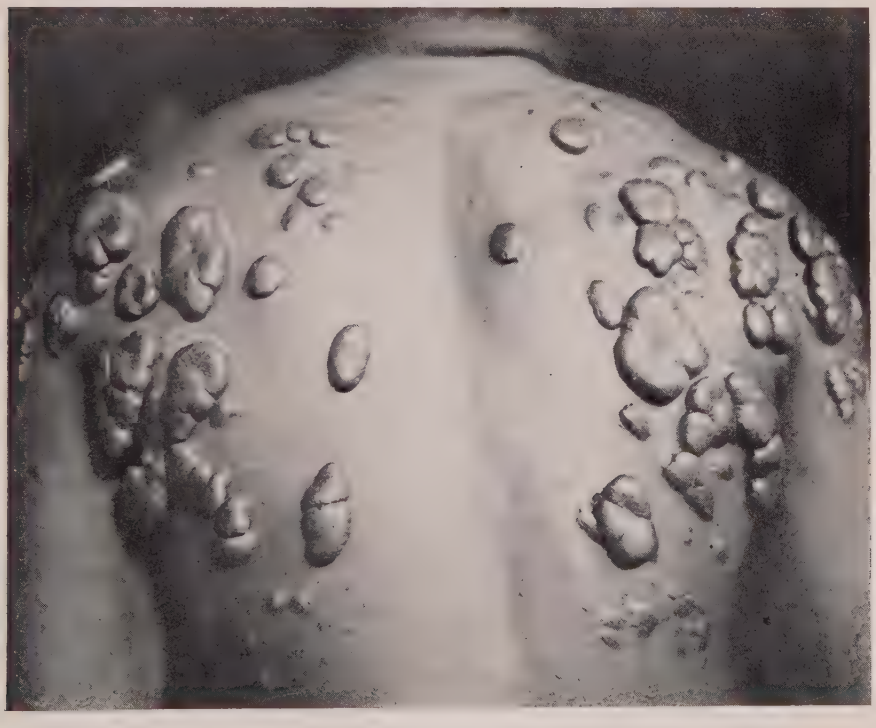


FIG. 195.—Keloid. (Negro.)

a certain amount of symmetry in their distribution, a feature which is regarded by many authors as characteristic of the so-called "spontaneous keloid." While the tumors may occur in any region, there are certain localities for which they exhibit a well-marked predilection; these are, in the order of frequency, the sternum, where they usually present the characteristic claw-like configuration, the lobes of the ears, where they are apt to occur as the sequel of piercing of the ears; the nape of the neck, and the back.

Cicatricial keloid, or the so-called "false keloid," does not present any symptoms by which it may be distinguished from that which is supposed to arise spontaneously, except that it develops at the site of

a scar. A distinction must be made, however, between this form and the hypertrophic scar, such as develops so frequently in the scars of burns (Figs. 196 and 197). The former, although beginning in a scar, does not remain limited to it, but extends into the neighboring sound skin, while the latter remains strictly limited to the cicatricial tissue.

Etiology.—The primary cause of keloid is unknown. Age and sex have little or no effect upon its incidence, although it is much more frequent in men than in women, because the former are much more exposed to injuries of the skin than the latter. Heredity seems at times

FIG. 196.—Hypertrophic scar (scar keloid) following a burn.

to have some influence in predisposing to it, since it is occasionally observed in two or more members of the same family. Race exercises a decided predisposing effect, the negro being much more liable to it than the Caucasian. In the vast majority of cases, if not in all, it follows an injury to the skin, beginning in a scar the consequence of a punctured or incised wound or the result of diseases of the skin, such as acne or the pustular syphiloderm. That a special predisposition is necessary, however, to call it forth is quite evident, since every individual suffers from numerous injuries to his skin and has scars in consequence, while very few suffer from keloid. Since very trivial injuries may be sufficient in predisposed individuals to produce it, it

is more than probable that the so-called spontaneous form follows injuries so slight that they escape notice. Crocker saw a most extensive case follow prickly heat. That some special quality in the irritant may be necessary is suggested by the very remarkable case observed by Welander (quoted by Unna, "Histopathology of the Diseases of the Skin") in which keloid developed in a tattooed figure in the red portions only, while those in which blue pigment was used escaped.

FIG. 197.—Keloid, back (followed burn with a cupping-glass).

Pathology.—Keloid is essentially a fibroma having its origin in the deeper portions of the corium; and there is no demonstrable histological difference between the true and the so-called false or cicatrical forms. It is composed of bundles of fibres which for the most part run parallel with the long axis of the tumor, and in its early stages contains a considerable number of small round cells most abundant in the neighborhood of the vessels, which extend along these sometimes, according to Warren and Crocker, some distance beyond the visible limits of

the growth. The older lesions are poor in cells and their vessels are markedly atrophied, even to the point of complete disappearance at times. Neither follicles, glands, nor elastic tissue is as a rule present in the tumor, the two former having been pushed to one side. According to Warren, Kaposi, Vidal, Joseph, and others, who maintain a distinction between spontaneous and scar keloid, the papillary body and the corresponding interpapillary prolongations of the rete are present in the former, absent in the latter, but the observations of Babes, Crocker, and others have shown quite conclusively that this is by no means always the case, the reverse sometimes being true.

Diagnosis.—The peculiar scar-like appearance of the growth, its frequent situation over the sternum, and its usual association with cicatrices are features which enable it to be easily recognized. From the hypertrophic scar it may be distinguished by its involvement of the neighboring sound skin.

Prognosis.—As a rule to which there are very few exceptions, keloid continues indefinitely, but after reaching a certain stage of development it frequently remains stationary. In rare cases it exhibits a tendency to spontaneous involution and may eventually disappear. Hypertrophic scars, after a duration of two or three years, usually flatten down considerably, and may eventually assume the characters of the ordinary cicatrix.

Treatment.—Operative treatment is rarely, if ever, to be advised, since with rare exceptions it only results in an increase in the size of the tumor when it returns, as it almost invariably does. Electrolysis has been used with some success in a limited number of cases, Crocker regarding it as one of the most useful methods of treatment. Vidal recommended repeated linear scarification followed by the application of antiseptic dressings. In small growths the author has seen improvement follow the continued application of lead plaster diluted somewhat with petrolatum, at the same time applying moderate pressure with a roller bandage. Crocker and Pernet obtained a certain amount of improvement from injections of a 10 per cent. solution of thiosinamin in alcohol or in equal parts of water and glycerin, made into the tumor, giving ten to twenty minims at each injection. The most useful remedy is the X-ray, Pusey, Ormsby and others reporting not only improvement, but cure in a number of instances; and the author has in a small number of cases under his own observation noted a decided diminution in the size of the growth after such treatment.

CICATRIX

Synonyms.—Scar; Fr., Cicatrice; Ger., Narbe.

Definition.—A connective-tissue new-growth replacing a loss of substance involving the corium.

Symptoms.—Scars are perhaps the commonest of all the lesions

met with upon the skin, indeed there are few, if any, adult individuals who cannot show more than one. They may be found on any part of the body and vary greatly in their appearance. They may be round, linear, or irregular in shape; they may be thin, smooth, soft, and pliable, or thick, uneven, hard, and unyielding; they may be elevated, depressed, or level with the sound skin. Fresh scars are usually red or violaceous in color, while old ones are white, often whiter than normal skin; less frequently they are livid or pigmented. The thicker scars often exhibit a more or less marked tendency to contraction, and in consequence may give rise to deformity and to interference with the functions of movable parts. They vary much in their characteristics according to their causes: as is well known, the scars of burns are especially prone to contraction. In the face contracting scars frequently cause ectropion and distortion of the mouth; and upon the neck, when extensive, they may pull the chin down upon the chest and interfere with the free movement of the lower jaw. The scars of syphilis are usually quite round, soft, and pliable, are often more or less pigmented, especially about their borders, while those which result from tuberculous ulceration are irregular in shape, uneven, and at times quite hard. A knowledge of these peculiarities is frequently of much service in diagnosis.

Etiology.—Scars are in most cases the result of such injury or ulcerative disease as produces a break in the continuity of the skin involving the corium; they may also follow the absorption of inflammatory or other products deposited in the skin without any external break, as frequently happens in certain of the lesions of acne and syphilis.

Pathology.—The scar is the product of a reparative process; beginning as granulation tissue, it varies much in its histological features according to its age. Recent scars are made up of fibrous connective tissue in which are many leucocytes, young connective-tissue cells, and numerous new-formed capillaries. Old lesions contain but few cells and are composed chiefly of bundles of collagen fibres with some new-formed delicate elastic-tissue fibres. The epidermis is thinner than normal and its lower margin, instead of presenting the usual markedly undulatory line, is quite straight or only very slightly wavy owing to the absence of the papillary body of the corium. While it is commonly stated that the latter is never reproduced in scars, this is only measurably true, since in many scars small papillæ are present. Hair-follicles and glands are absent.

Treatment.—Scars may require treatment for cosmetic reasons or because they interfere with important functions. Small lesions may sometimes be sucessfully dealt with by electrolysis, by injections of thiosinamin, or occasionally by massage. The X-ray occasionally renders good service in the treatment of unsightly scars, but should be used with caution, lest a radiodermatitis be excited, which is apt to be followed by disfiguring telangiectases. Mercier has very recently

reported excellent results from the Röntgen ray in the treatment of cicatrices interfering with the movements of the fingers, hand, and arm, following wounds; eight to twelve treatments were given. In many cases excision is the remedy of choice, closing the defect, when it is considerable, by skin grafting or by the transplantation of skin from the neighboring parts.

GRANULOMA ANNULARE

Synonyms.—Ringed eruption (Colcott Fox); Eruption chronique circinée de la main (Dubreuilh); Lichen annularis (Galloway); Benign sarcoid (Galewski); Neoplasie circinée et nodulaire (Brocq); Erythemato-sclerose du dos des mains (Audry); Stereo-phlogose nodulaire et circinée (Pellier); Helodermia simplex et annularis (Vörner); Erythema elevatum diutinum (Crocker).

Definition.—A benign new-growth occurring in small annular

Fig. 198.—Granuloma annulare.

and crescentic patches situated principally upon the extremities, most frequently upon the hands.

The credit of having first recognized this affection belongs to Colcott Fox, who, in 1895, reported a case under the name "ringed eruption." Radcliffe Crocker a year before had reported a case as one of lupus erythematosus resembling lichen planus, but, after seeing other cases, recognized his error and suggested for the affection the name granuloma annulare, which has been generally accepted by English and American dermatologists.

Symptoms.—It is distinguished by one or more annular or crescentic patches from a half to an inch or more in diameter, composed of firm, flat, hemp-seed-sized or larger whitish, pinkish, occasionally violaceous, nodules situated most frequently upon the hands (Fig. 198), usually on the backs of the fingers about the joints, less commonly upon the tops of the feet, and exceptionally upon the trunk. The skin in the centre of the patches may be quite normal in appearance, or somewhat depressed and atrophic. There is often but a single patch, but two or three are not uncommon, and exceptionally there may be

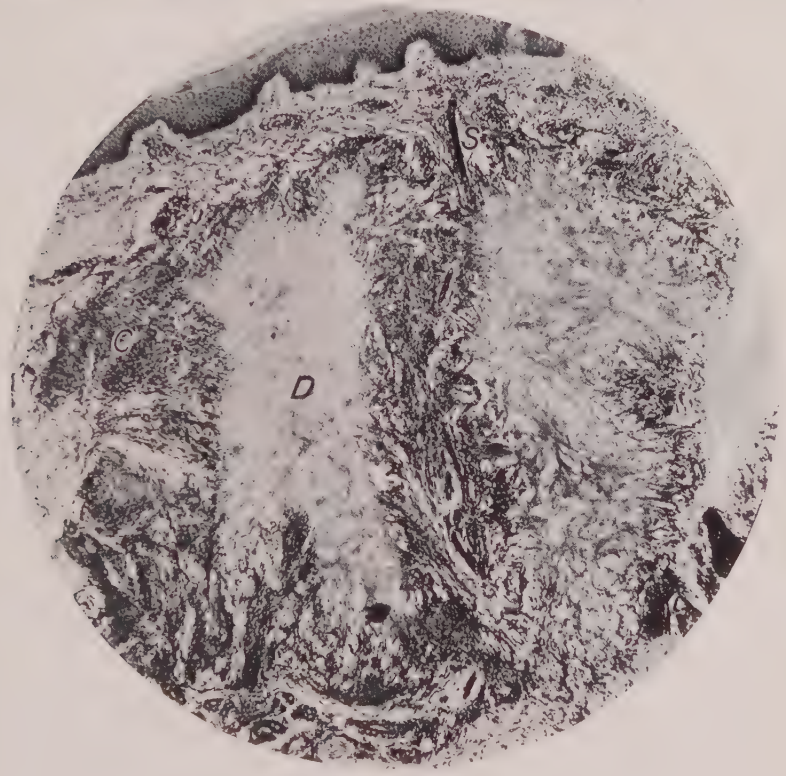


FIG. 199.—Granuloma annulare. *C*, cellular exudate made up of cells chiefly of connective-tissue type; *D*, central area of necrosis; *S*, sweat-duct.

as many as a dozen or twenty. In a case under the author's observation, occurring in a child 3 years old, there were six or eight dime-sized rings on the arms, abdomen, and legs. The affection often appears quite suddenly without any premonitory signs, and when once fully developed may persist indefinitely. In rare instances, instead of annular patches, the disease occurs as firm, flat, pinkish, pea-sized nodules or finger-nail-sized plaques, a form described by Crocker as *erythema elevatum diutinum*. In a case of this kind seen by the author some years ago there were three small, oval and irregularly shaped plaques the size of a finger nail, one upon the side of the neck, another upon

the back of the hand, and a third upon the side of the leg. Occasionally both annular patches and flat plaques or nodules may be present at the same time, as in the author's first case; or it may begin with nodules which by central involution and simultaneous peripheral extension become ring-shaped and crescentic patches, as in the case reported by Wende.

No subjective symptoms of any kind accompany the affection, as a rule.

Etiology and Pathology.—The malady is seen chiefly, but not exclusively, in children and young adults. Graham Little, who has made an extensive study of it based upon fifty cases, is strongly of the opinion that it is in some way closely related to tuberculosis, but the evidence for this is, to say the least, not convincing, and the author's experience is altogether against it.

The histopathology is quite characteristic. The epidermis is but little or not at all altered. Beginnng in the subpapillary portion of the corium and extending down to the hypoderm there is a fairly well-circumscribed cellular exudate composed largely of spindle cells of the connective-tissue type, lymphoid cells, and a few large epithelioid cells, densest about the vessels, and the coil-glands and their ducts. The most striking and characteristic feature is an area of necrosis (Fig. 199) occupying the centre of the exudate in which every trace of cellular structure has disappeared and about the borders of which the cells are arranged in radiating lines. This necrotic area is small in recent lesions, but much more extensive in the older ones.

Examination of sections made from the plaque on the back of the hand of the case of erythema elevatum diutinum referred to above, showed the same histological features characteristic of granuloma annulare and left no room for doubt in the author's mind that the two maladies are identical.

Diagnosis.—The frequent localization on the hands, particularly about the joints of the fingers, the firmness of the nodules, the ringed arrangement of the patches, the youth of the patient, the absence of subjective symptoms of any sort, and the indefinite duration of the lesions are distinctive features. It may be mistaken for the annular form of lichen planus, but the nodules never present the peculiar flat tops with occasional umbilication seen in that affection and are decidedly harder.

Prognosis and Treatment.—When left to itself it may continue for many months or even indefinitely; in a very considerable proportion of cases, however, the nodules disappear spontaneously, leaving neither pigmentation nor scarring.

Jadassohn (quoted by Little) thought the internal adminstration of arsenic exercised a beneficial effect upon the disease. Graham Little found salicylic acid in ointment or plaster and ointments of ichthyol and resorcin satisfactory. The author has found X-ray treatment the most satisfactory method of dealing with the affection.

PARAFFINOMA

Definition.—A tumor-like formation due to the injection of paraffin into the skin.

Symptoms.—Since the introduction of paraffin prosthesis by Gersuny in 1900, injections of paraffin have been largely employed for the correction or removal of facial deformities and blemishes. In a considerable number of instances these injections have been followed, after an interval varying from some months to one or two years, by the formation of firm tumor-like masses at the site of the injection. These vary in size from a small to a large nut, are smooth or nodular, and are red or violaceous, often with dilated capillaries over their surface. They are usually quite firm and at times bear some resemblance to keloid. They are situated usually about the angles of the mouth, beneath the eyes, and about the alæ of the nose, regions in which the injections have been made to fill up hollows or smooth out wrinkles. At times there is considerable œdema of the surrounding parts, especially when they are situated in the neighborhood of the eyes. The amount of deformity produced is frequently considerable, but they are not accompanied by any annoying or painful subjective symptoms.

Pathology.—According to Heidingsfeld, who has made a careful study of the histopathology of two cases, the paraffin acts as a foreign body, setting up an inflammatory reaction, with exudation of leucocytes and the formation of many giant-cells. The paraffin gradually disappears and is replaced by fibrous connective tissue which presents a honeycombed appearance, the cavities representing the spaces formerly filled by the paraffin.

Diagnosis.—Paraffinoma may at times resemble keloid or lupus vulgaris, but is usually much less firm than the former and does not present the small brownish-red nodules with ulceration which distinguish the latter. Due regard being paid to the history, there is usually but little difficulty in recognizing the nature of the tumors.

Treatment.—The mass should be thoroughly removed by excision, taking especial care to remove all the paraffin to prevent recurrences. The excision should be followed by X-ray treatment.

LIPOMA

Synonym.—Fatty tumor.

Definition.—A new-growth composed of fat-tissue characterized by soft, usually somewhat elastic tumors of variable size.

Symptoms.—Lipoma may occur as a solitary growth or as multiple tumors which are usually rather soft and elastic, sessile and indistinctly lobulated. They grow slowly and reach a size varying from a nut to the fist or even larger. The large tumors are commonly solitary and occasionally attached by a pedicle; the multiple growths vary in size from a small nut to an egg, but rarely reach the dimensions attained by the single tumors. Except in regions where they are exposed to constant pressure or friction they are painless and freely

movable with the skin. The skin over them is in most cases normal, although in old lesions it may be somewhat pigmented. As a rule, after reaching a certain size they cease to grow, but in exceptional cases they may continue to enlarge indefinitely and eventually reach a size of several pounds. Instead of occurring as well-defined tumors, they may assume the shape of ill-defined diffuse infiltrations sometimes of considerable extent, the result of the fusion of a number of smaller masses, a notable example of this form being the so-called "fatty neck" (Fig. 200). Although fatty tumors may occur on any portion of the body, the most frequent site is the back, the least frequent the scalp.

In this connection mention may be made of the affection first

Fig. 200.—Lipoma.

described by Dercum as "adiposa dolorosa," in which there are irregular fatty deposits distributed over various parts of the body, sometimes symmetrically with marked debility, alterations of tactile and temperature sense, tenderness, and pain. In most instances the patients have been women in middle life.

Etiology.—Lipoma is a disease of adults, occurring in most instances in middle-aged individuals, although a few examples of its congenital occurrence have been observed (Jacobi). Women are much more frequently affected than men, but the diffuse form is confined almost exclusively to the latter. In a few instances it seems to have been inherited (Murchison, Blaschko).

Pathology.—The tumors are composed of fat-tissue which does

not differ essentially from that of the subcutaneous fat, although the cells are somewhat larger. They are surrounded by a fibrous capsule and divided into lobules by fibrous septa which contain the blood-vessels which supply the tumor. Occasionally fibrous tissue is present in considerable amount (fibrolipoma) and may contain calcareous or osseous deposits. In a small number of cases of multiple lipoma and in two cases of adiposa dolorosa, alterations of the thyroid gland were observed (in the latter, induration and calcification).

Diagnosis.—The features which distinguish them from other neoplasms are: their soft elastic quality, their lobulated structure, and their slow growth and painlessness.

Prognosis.—Although they occasionally produce considerable disfigurement or inconvenience when they are numerous or large, they are altogether without influence upon the patient's general condition. When subjected to long-continued pressure they may ulcerate.

Treatment.—Large single tumors may be removed by excision. In multiple tumors Joseph recommends injections of absolute alcohol made directly into the tumor at several points, at intervals of a few days; this is followed by softening of the fat which may then be evacuated by incision.

DERMATOMYOMA

Synonyms.—Myoma; Leiomyoma; Myoma levicellulare; Fr., Myome; Ger., Myom.

Definition.—A new-growth composed of unstriped muscle, situated in the corium, characterized by small solitary or multiple tumors.

Symptoms.—Myoma is a rare neoplasm and may be solitary or multiple. The solitary form, the *myome dartoique* of Besnier, which is the more frequent, occurs as a small firm tumor which varies in size from a small nut to the fist, is sessile or pedunculated, is more or less vascular, and when irritated or exposed to changes of temperature exhibits some degree of contractility. Although usually painless, in exceptional cases it may be the seat of severe pain. In the great majority of the cases observed, the tumor was situated upon the breast, in the areola of the nipple, on the scrotum or the labia; it has been seen, however, in other regions.

Multiple myoma is characterized by a variable number of hemp-seed- to pea-sized, rarely larger, firm nodules embedded in the skin, pinkish or brownish-red in color. The number of lesions is usually limited, but in exceptional cases large numbers have been observed. While they frequently occur in irregular groups or patches, they, as a rule, exhibit no definite arrangement or distribution, and may be found on any portion of the body. At first painless, they after a time become sensitive, and in about one-half the cases are subject to paroxysms of severe pain lasting from a few minutes to some hours, the pain appearing spontaneously or after exposure to cold. In the cases reported by Jarisch and Jadassohn, severe itching was like-

wise present along with the pain. The tumors grow very slowly, but rarely reach any considerable size, and after a time cease to grow; new tumors, however, continue to appear at irregular intervals.

Etiology.—We are in complete ignorance of the cause of the malady. Age and sex apparently exert little or no influence in its causation. In the great majority of cases the tumors have appeared almost imperceptibly, without any previous alteration of the skin; but in the case reported by Brigidi and Marcacci, swelling of the hands preceded the appearance of tumors in this region. Wolters has reported a case of multiple myoma in which the tumors appeared rather suddenly in a diabetic subject, but there seems to be some doubt as to the correctness of the diagnosis—the lesions were much like those of xanthoma.

Pathology.—The tumors are situated in the reticular portion of the corium and are composed of interlacing bundles of smooth-muscle fibres and an abundant network of elastic tissue. The larger solitary tumors occasionally, in addition to muscle fibres, contain a considerable amount of fibrous tissue (fibromyoma), at times are very vascular (angiomyoma), or contain numerous dilated lymphatics (lymphangiomyoma). The small multiple tumors take their origin in the arreactores pilorum, while the solitary and larger growths originate in the deeper muscular structures of the skin, such as the muscular coat of the vessels or the muscular fibres in the sudoriparous glands.

Diagnosis.—Dermatomyomata are to be distinguished chiefly from neurofibroma and neuroma, but the differential diagnosis can rarely, if ever, be positively made without the aid of a biopsy.

Prognosis.—The affection is a benign one, but is likely to continue indefinitely, although both Jadassohn and Lukasiewicz observed partial spontaneous involution of the tumors.

Treatment.—Small lesions may be destroyed by electrolysis; for the larger ones excision is the only remedy.

NEUROMA

Synonyms.—Nerve tumor; Fr., Nevrome; Ger., Neurom.

Definition.—A new-growth composed of connective tissue and nerve fibres situated in the corium and distinguished by multiple painful tubercles and small tumors.

Tumors made up of nerve tissue are occasionally found on the severed ends of nerves in amputation stumps or upon nerve trunks as nodules and fusiform swellings (plexiform neuroma), but as these are not situated in the skin we shall not consider them here. Neuroma of the skin is an extremely rare affection, there being but two well-characterized examples in dermatological literature, viz., the cases of Duhring and Kosinski; to these two cases may perhaps be added the case of extremely tender multiple tumors on the back of a woman presented by Cavafy before the Dermatological Society of London

in 1893. The cases of Duhring and Kosinski were characterized by multiple pea-sized and somewhat larger pinkish or slightly violaceous, closely aggregated nodules and tumors situated in the one instance over the scapula, shoulder, and upper arm, in the other over the buttock and the posterior surface of the thigh. In both cases the lesions were at first painless, but after a time, three years in Duhring's case, they became very sensitive and subject to paroxysmal attacks of severe pain lasting several hours.

Etiology.—The cause of the affection is altogether unknown. Duhring's patient was a man in apparently good health, sixty years of age; Kosinski's case occurred in a youth of sixteen.

Pathology.—In both Duhring's and Kosinski's cases the tumors were found to contain both fibrous connective tissue and non-medulated nerve fibres, *i.e.*, they were neurofibromata. In the former a careful dissection failed to discover any connection with the nerve trunks, although excision of a portion of the brachial plexus was followed by great, although temporary, relief. In the latter the tumors were found to be supplied with filaments from the small sciatic and external cutaneous nerves.

Diagnosis.—Cutaneous neuroma is to be distinguished from plexiform neuroma and from the affection described by Wood as "painful subcutaneous tubercle." Both the latter are distinctly subcutaneous; plexiform neuroma is situated along the trunks of nerves, while the subcutaneous tubercle, which is almost without exception solitary, occurs in the neighborhood of a joint.

Treatment.—The only treatment which has proven effective is excision of a portion of the nerve supplying the affected region. As already observed, Duhring's patient obtained decided, although only temporary, relief from excision of a portion of the brachial plexus, the return of the pain being due to the union of the severed ends of the nerve, as shown at the autopsy. In Kosinski's case, immediate cessation of the pain followed resection of the small sciatic nerve, and the tumors almost completely disappeared.

OSTEOMA CUTIS

Synonym.—Osteosis cutis.

In a few instances deposits of bone in the skin have been observed, either as flat plaques or more commonly as hard nodules, usually of small size. Examples have been reported by Salzer, Coleman (Sherwell's case), Pusey (case observed by Harris), Taylor and Mackenna, and Heidingsfeld. In most of the reported cases there was but a single tumor, and the overlying skin presented nothing abnormal, but in the case reported by Taylor and Mackenna there were nine or ten plaques and nodules scattered over the extremities, trunk, and scalp, over which the skin was purplish. In Harris' case the deposit was situated in a laparotomy scar, in Heidingsfeld's a nodule the size of a bean was present in a hairy nævus on the chin.

A positive diagnosis can only be made by excision and microscopic examination.

The treatment is wholly surgical.

XANTHOMA

Synonyms.—Xanthelasma; Vitiligoidea; Fibroma lipomatodes; Molluscum cholesterique; Plaques jaunatres des paupières (Rayer); Fr., Xanthome; Ger., Xanthom.

Definition.—A benign new-growth characterized by yellow nodules, tumors, flat plaques, and striæ situated upon various parts of the skin.

Three varieties of this affection are commonly recognized, viz., xanthoma planum, confined to the lids; xanthoma tuberosum, and xanthoma diabeticorum. These, while resembling one another in a general way, differ sufficiently to require separate consideration.

Xanthoma Planum; Xanthoma Palpebrarum.—Symptoms.—This is a by no means infrequent affection, and consists of yellowish or chamois-colored patches situated upon the lids, usually upon the inner half, although the entire lid may be affected. It begins commonly at the inner canthus, as one or more quite small yellow spots, which slowly enlarge and coalesce until they may occupy the greater part or all of the surface. The skin is soft, smooth, and pliable, and apparently but little changed except in its color. Much less frequently the patches are decidedly infiltrated and project above the surface as flat nodules or elongated bands of a bright yellow or orange color. In a young woman under the author's care a few years ago a distinctly elevated bright-yellow band about 3 mm. wide occupied the free borders of both upper lids, producing a very bizarre disfigurement. The affection is always symmetrical; although it may begin on one side, both sides are eventually involved. The color, while in the great majority of cases some shade of yellow, may be whitish or may be quite dark or even brown. There are no subjective sensations, as a rule.

Xanthoma Tuberosum.—Synonyms.—Xanthoma tuberculatum; Xanthoma tuberosum multiplex.

Symptoms.—This variety of xanthoma, which is much less frequent than the preceding, indeed, a rare disease, is characterized by shot- to pea-sized nodules, and tumors varying in size from a nut to a small orange, usually a pronounced yellow in color, situated most frequently about the joints, such as the knuckles, elbows, and knees, but also on other parts of the limbs, trunk, and face. These nodules and tumors are usually firm and elastic, but are occasionally quite soft, and vary in numbers from two or three to scores. While usually scattered about discretely, they may be closely aggregated, forming nodular masses or plaques with uneven nodular surface, sometimes of considerable extent. Upon the palms and soles, especially the former, it occurs as yellow or chamois-colored somewhat elevated

PLATE XXXIV

Xanthoma tuberosum.

bands situated in the normal furrows (Plate XXXIV). Nodules are occasionally found in the sheaths of the tendons and in the mucous membranes of the lips, gums, and in rare instances upon the conjunctiva.

The course of the malady is usually slow; new nodules may continue to appear from time to time, while the old ones, after slowly increasing in size for a variable period, become stationary and undergo little or no change in their appearance for an indefinite period. Quite exceptionally spontaneous involution with the complete disappearance of the lesions has been observed.

In a very large proportion of cases—50 to 75 per cent.—a more or less marked jaundice, the result of hepatic disease or obstruction of the biliary passages, precedes or accompanies the cutaneous affection. In children, however, in whom the disease is rare, jaundice is never present.

Xanthoma Diabeticorum.—Symptoms.—This is much less frequent than either of the other forms of xanthoma and differs from them materially in its symptoms and course. It is apt to appear rather suddenly as an eruption of dull-red papules, many of which have yellow tops, so that they resemble pustules somewhat, but they contain no fluid and are quite firm to the touch. The eruption varies much in the number of lesions and in its distribution. At times the papules are few in number and confined to the extremities, usually the extensor surfaces; at other times they are extremely numerous and distributed over the greater part of the trunk, extremities, and face, but, unlike the other varieties, almost never upon the lids. Occasionally when the eruption is very abundant, the lesions may coalesce to form plaques of considerable extent, and may be found in the mouth. There are usually some itching and burning, and at times these may be sufficiently pronounced to cause the patient considerable discomfort. In exceptional cases the yellow hue of the eruption is quite pronounced, as much so as in the nodular variety.

After a duration varying from a few months to a year or two, the eruption usually disappears, sometimes within a very short time. In some cases it pursues a somewhat irregular course, the eruption coming and going, at times almost completely disappearing, then reappearing.

In the great majority of cases, but not invariably, glycosuria is present, either continuously or intermittently.

Etiology.—Xanthoma of the lids is somewhat more common in women than in men, according to Hutchinson, in the proportion of three to two. It is seen chiefly in adults, although it may in rare cases occur in children. A number of authors, among them Church, Fagge, Török, have noted its occurrence in several members of the same family and in successive generations, so that it seems probable

that heredity plays some part in its production. It has been observed in association with migraine, gout, uterine disease, and disease of the liver, but with the exception of the last-named the causal relationship of these to the affection is very doubtful.

In xanthoma tuberosum, jaundice is present in so large a percentage of cases that it can scarcely be doubted that there is an intimate relationship of some sort between the two diseases. Pinkus and Pick are of the opinion that a deposition of cholesterin-fatty-acid-ester, which is present in considerable quantity in the blood of patients with icterus and glycosuria, takes place in the connective tissue and endothelial cells, and that this is the essential characteristic of xanthoma; and Schmidt succeeded in demonstrating a considerable cholesterinæmia in xanthoma patients. Pollitzer and Wile believe it due to the irritative effects of cholesterol-fatty-acid-ester upon the connective tissue. It would seem that the causal relationship of this lipoid to the malady is pretty well established by these studies.

Pathology.—Xanthoma is a connective-tissue hyperplasia accompanied by a deposition of a peculiar fat-like substance in the connective-tissue cells, in the lymph spaces, and between the fibres of the corium, which gives to the lesions their characteristic yellow color. While many authors regard the several forms of the malady as practically identical in their histological features, Unna, and still more recently Pollitzer, deny that xanthoma of the lids (xanthoma planum) is in any way related to the nodose form; the latter regards it, not as a hyperplasia, but as a special form of fatty degeneration of the muscle fibres of the lids. In lid xanthoma the epidermis shows little or no change, but in the nodular variety it is at times somewhat thinned as the result of pressure from beneath by the growing tumor. In the derma are numerous peculiar large round and oval cells with a granular protoplasm and one or several round or oval nuclei arranged in elongated tracts or rounded "nests" situated between the collagenous fibres of the corium; these, which are derived from the connective-tissue cells, are the so-called "xanthoma cells." Here and there large round multinuclear cells, xanthoma giant-cells, are scattered throughout the growth (Fig. 201).

In xanthoma diabeticorum the histological changes are much more indicative of inflammation than in the other forms. There are perivascular collections of lymphoid, plasma, and connective-tissue cells along with xanthoma cells, the last being less numerous than in the nodular and plane varieties.

The sweat- and sebaceous-glands and the elastic tissue are in all the forms practically unaffected.

Diagnosis.—The symptoms of all the forms of xanthoma are usually so striking and characteristic that the diagnosis rarely, if ever, offers any difficulty. In children when the lesions are numerous and flat there may be a superficial resemblance to urticaria pigmentosa, but wheals are never present and the eruption is distinctly yellow. In

xanthoma diabeticorum the yellow-topped papules and the presence of glycosuria are distinguishing features.

Prognosis.—Xanthoma of the lids and xanthoma tuberosum usually last indefinitely; although a few cases of spontaneous disappearance of the latter have been reported, this is altogether exceptional. In xanthoma diabeticorum the outlook for eventual recovery is more favorable; after lasting some months or years, the eruption usually disappears, but relapses may occur.

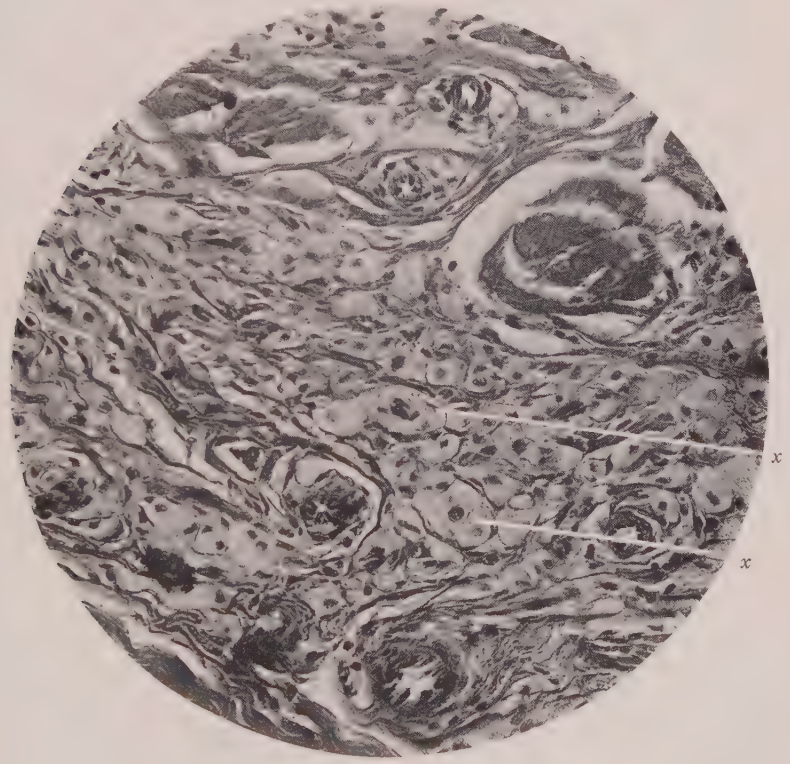


FIG. 201.—Xanthoma tuberosum. *X*, Large so-called "xanthoma cells."

Treatment.—Painting the patches lightly with trichloracetic acid is often an effective method of dealing with xanthoma of the lids; the patches may also be destroyed by electrolysis, but relapses or a further extension of the disease is not at all infrequent after both these. In the nodular variety the larger lesions may be removed by excision or by applying a 25 per cent. plaster of salicylic acid, as recommended by Morrow. In xanthoma diabeticorum, a diet appropriate to the glycosuria should be employed; and when itching is a pronounced symptom, a lotion of phenol, 1 to 2 per cent., in water may be applied two or three times a day.

PSEUDOXANTHOMA ELASTICUM

Synonym.—Xanthoma elasticum.

This rare affection, which was first described by Balzer, resembles xanthoma in some of its clinical features. It consists of yellowish macules and flat, slightly elevated nodules varying in size from a pin-head to a split pea, discrete or confluent, in the latter case forming variously sized patches. The lesions are symmetrically distributed, most commonly in the subclavicular, axillary, and abdominal regions and in the flexures of the extremities, usually avoiding the regions commonly affected by xanthoma, although in one or two of the reported cases the face was slightly affected. In most cases it is unaccompanied by any subjective symptoms, although occasionally itching of a more or less pronounced character is present. In a series of fourteen cases recently collected by Herxheimer and Hell, the patients were of all ages; although the majority were middle-aged, it likewise occurred in children and in the aged.

Pathology.—The histopathology, which has been studied by Balzer, Darrier, Bodin, and others, who are in practical agreement as to the changes present, is quite characteristic, and is indicative of degeneration of the elastic tissue. Areas of granular material situated between the fibres of the corium are scattered through the derma, and these exhibit the staining reaction characteristic of elastin. The collagen fibres show no change. Bodin found in a case which he studied giant-cells situated at the periphery of the lesions near the vessels with the perithelial layer of which they seemed to be in relation. The affection is apparently closely related pathologically to colloid degeneration of the skin, if it is not identical with it.

Diagnosis.—The affection is to be distinguished from xanthoma by the less yellow color of the lesions and by the locations affected, which, as already noted, are different from those of the former malady.

Treatment.—The treatment is unsatisfactory. When the lesions are few and the patches small, painting them lightly with tricholoracetic acid or electrolysis might be tried as in xanthoma planum.

COLLOID DEGENERATION OF THE SKIN

Synonyms.—Colloid milium; Colloidoma miliare; Hyaloma.

Definition.—A benign neoplasm distinguished by pin-head-sized yellow nodules resembling milium, situated for the most part upon the face.

Symptoms.—This disease, which was first described by Wagner in 1886, under the misleading name "colloid milium," is a very infrequent affection, not more than a score of cases having thus far been observed.

It consists of numerous pin-head- to shot-sized, occasionally larger, discrete and confluent, translucent elevations varying in color from a bright lemon-yellow to a brownish yellow, situated mostly upon the face,

PLATE XXXV

Colloid degeneration of the skin.

especially both malar eminences and over the bridge of the nose; less frequently the backs of the hands and the ears exhibit similar elevations. Owing to their translucency, they resemble vesicles in appearance, but they are quite firm to the touch, and when pricked no fluid escapes from them. After incision a pale yellowish material may be expressed resembling glycerin jelly. In exceptional cases the conjunctiva may be the seat of yellowish patches resembling pterygium, and in one case at least the mucous membrane of the lip was the seat of lesions like those upon the cheeks. The course of the affection is a chronic one; in most of the cases

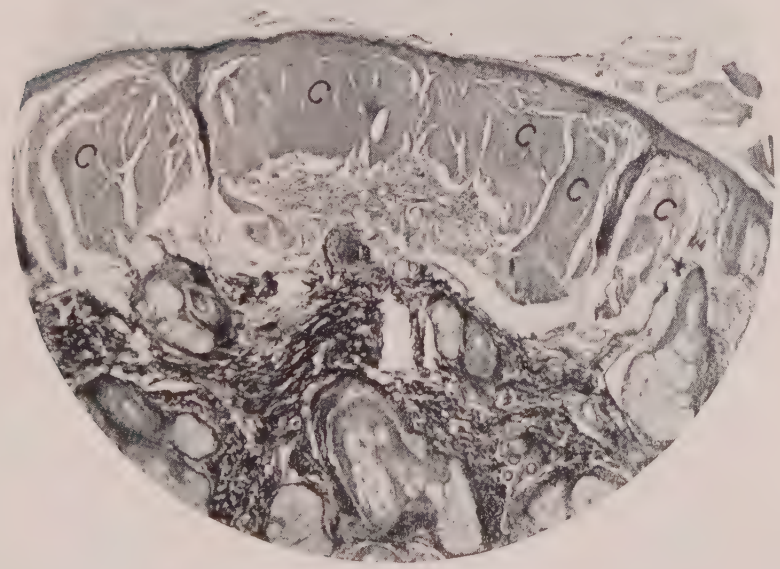


FIG. 202.—Colloid degeneration of the skin, so-called colloid milium. *C*, colloid masses replacing the rete mucosum and papillary body of the corium.

reported it had lasted for several years, showing but little change when once established. In a small number of instances, however, the lesions undergo spontaneous involution, and the entire disease may disappear completely in the course of a variable period of time. There are no subjective symptoms of any importance (Plate XXXV).

Etiology.—The cause of colloid degeneration of the skin is unknown. In about one-half of the reported cases the patients were between forty and seventy years of age and had been much exposed to the weather, the skin exhibiting considerable pigmentation of the

exposed parts upon which the disease was situated. Although so large a proportion of those affected were middle-aged or old, the malady is by no means confined to these, but may occur in children, one case having been observed in a boy nine years of age.

Pathology.—The malady is a peculiar degeneration of the skin which results in the formation of a jelly-like material, colloid. Those who have studied the pathology and morbid anatomy of the malady differ somewhat in their views as to what tissues are affected and where the degeneration begins. Some, such as Jarisch and Pelizarri, believe it a degeneration of the elastic tissue chiefly, but the author's own studies lead him to agree with those who think both the collagen and elastin equally involved in the degeneration. The principal morbid changes are situated in the upper and middle portions of the corium. The papillary and subpapillary layers are entirely replaced by an amorphous granular material which reacts to the various staining reagents in a manner characteristic of colloid (Fig. 202); the elastic tissue has either entirely disappeared or is in various stages of degeneration. Exceptionally the prickle-cells of the epidermis share in the colloid transformation, although, as a rule, the cellular elements exhibit a somewhat remarkable immunity.

Diagnosis.—The peculiar yellow color of the lesions, their vesicle-like translucency, their situation upon the face, particularly over the zygoma and the bridge of the nose, the absence of subjective symptoms, and the presence of a jelly-like material in their interior which may be readily expressed after incision, are features which will serve to distinguish it readily from other similar affections.

Treatment.—The lesions may be removed by the curette, or, what is preferable, by electrolysis. In employing the latter method of treatment, the platinum or iridium needle attached to the negative pole is thrust into the centre of each lesion and a current of five to ten milliampères allowed to flow for thirty to forty seconds. In a case under the author's observation the X-ray seemed to influence favorably the affection, but the patient was quite irregular in his attendance, so that no definite conclusion could be drawn as to the real usefulness of this agent.

ANGIOMA

Definition.—A new-growth composed principally of blood-vessels.

The angiomata vary greatly in size, structure, and mode of production. They may be arterial or venous or both; they may consist of new-formed vessels or may arise from dilated preëxisting ones; or, what is frequently the case, both new-formed and dilated vessels are present in the growth. According to their clinical or histological peculiarities, they are commonly divided into a number of groups. Kaposi arranged them in four, viz., Telangiectasis, nævus vascularis, angio-elephantiasis, and tumor cavernosus. Unna separates the vascular nævi from the angiomata proper because the former represent

a primary dilatation of the vessels and not a new growth of capillaries, and, unlike the latter, do not increase in size. Although admittedly much less accurate scientifically, they may for practical purposes be divided into two groups, viz., vascular nævi, including under this term all vascular growths present at or appearing shortly after birth, and acquired growths, the telangiectases, and angioma cavernosum which properly belongs to surgery rather than dermatology.

NÆVUS VASCULARIS

Synonyms.—Nævus vasculosus; Nævus sanguineus; Angioma simplex; Fr., Nævus vasculaire, Tache de feu; Ger., Gefässmal, Feuermal.

Definition.—A vascular new-growth characterized by flat patches or variously sized tumors of red or violaceous color, in most instances congenital or appearing shortly after birth.

Vascular nævi present great variations in their size and appearance. The commonest variety is the so-called "port-wine stain" (*nævus flammes, tache de feu, Gefässmal*), which occurs as variously sized and shaped non-elevated, usually smooth patches which vary in color from pale pink to bright crimson or dull violaceous, the color depending upon the degree of vascularity and the depth at which the vessels are situated in the skin. They are usually present at birth and rarely show any increase in size, but in very exceptional cases they may extend considerably (Crocker). Instead of being smooth and non-elevated, they may be more or less raised and studded over with pin-head- to pea-sized red tumors or wart-like growths, some of which may be attached by a short slender pedicle. Crying, coughing, or straining, by increasing the amount of blood in the patches, makes them a deeper color; by pressure the vessels may be completely emptied, leaving the skin slightly yellowish or faintly pigmented.

This variety of nævus is most frequently situated upon the face, the neck, and the extremities, and may be no larger than a coin or may cover the half or more of the face or the greater part of an extremity. Its most frequent site is the occipital region, where it occurs as a usually rather pale red stain just within the hair, sometimes extending down upon the neck. According to Depaul, one-third of all new-born infants present a nævus in this situation, and Unna observed it in from 10 to 20 per cent. The author's own observations fully confirm the frequency of its occurrence in this region. Another frequent site is the centre of the forehead between the eyes, where it forms a pale pink patch, which becomes a bright crimson when the infant cries; the less marked patches frequently disappear after some months.

Somewhat less frequent than the foregoing are small red or purplish flat or hemispherical tumors varying in size from a pea to an English walnut or larger, with smooth or lobulated surface, situated on the face, scalp, or, less frequently, the extremities (*angioma simplex, angioma glomeruliforme*, Unna). They are soft and compressible and

may be more or less completely emptied of blood by moderate pressure, the blood returning slowly when the pressure is removed. Coughing or straining causes them to become turgescent, and occasionally they are pulsatile. They are usually congenital or appear a few weeks after birth, commonly continue to grow for some time after their appearance, and in infrequent cases reach extensive proportions, involving, it may be, the greater part of a limb, which is usually enlarged and irregularly lobulated (*elephantiasis telangiectodes*) (Fig. 203). Occasionally they spontaneously ulcerate, and in this manner may be completely destroyed. In a case under the author's observation an angioma of this variety occupying the whole of the upper arm of an infant a few months old was thus removed in the course of two or three months and replaced by an extensive scar.

FIG. 203.—Nævus vascularis occupying the hand, forearm and a part of the upper arm.

Etiology.—The causes of vascular nævi are extremely obscure. They occur much more frequently in females than in males, according to Gessler, in the proportion of two to one. Virchow believed that they occurred most frequently in the region of the embryonic branchial clefts, probably as the result of some slight irritation during the development of the fœtus. Unna thinks it likely that they are the result of continued pressure on certain regions by the mother's bony pelvis during intrauterine life. The popular notion that they are due to prenatal maternal impressions lacks trustworthy evidence.

Pathology.—In nævus flammeus ("port-wine stain"), the middle and upper portions of the corium are occupied by numerous tortuous and dilated capillaries lined by flat epithelium. In simple angioma, which, as already remarked, Unna separates from the vascular nævi, although it is practically always congenital, the tumor is made up

of new-formed and dilated arterial capillaries, most abundant in the neighborhood of the hair-follicles and suboriparous glands.

Diagnosis.—The vascular character of the growth is usually so apparent, even on superficial examination, that the diagnosis may be made very readily. The faint nævi which are so common in the occipital region may in infants be mistaken for patches of mild dermatitis, but a careful examination will soon rectify this error.

Prognosis.—The port-wine mark is of importance only because of the very great disfigurement which it causes when at all extensive; it never occasions the patient any physical discomfort and seldom increases after birth, although it may do so in exceptional cases. The simple angioma may occasionally be the seat of hemorrhage, but rarely profuse enough to endanger the infant's life. It not infrequently, however, continues to grow for some time after birth, and may at times reach extensive proportions. As already noted, in a small number of cases spontaneous ulceration occurs, and may totally destroy it in the course of a few months.

Treatment.—Many methods of treatment have been employed for the removal of port-wine stain, but none of them has proven entirely satisfactory. Radiotherapy probably gives the most satisfactory results from the cosmetic point of view. The use of radium, as advocated by Wickham and Degrais, frequently removes the stain with scarcely perceptible scarring; and much the same results may occasionally be obtained by exposure to the X-ray. The latter should be used with caution, however, lest atrophy of the skin or disfiguring telangiectases result. When the patches are small, freezing by solid carbon dioxide or by liquid air sometimes gives satisfactory results, but care must be taken not to freeze the parts too deeply, otherwise disfiguring scarring will follow. The "snow" should be applied for ten to twenty seconds with only moderate pressure. The patches may also be destroyed by electrolysis, using an irido-platinum needle attached to the negative pole and a current of three to five milliampères. Numerous punctures are made in the patch a short distance apart, allowing the current to act for twenty to thirty seconds. The method is extremely tedious and is suitable only for small patches. When used with judgment, the high-frequency spark may be employed with excellent effect, but this, too, is best adapted to patches of moderate extent.

Angiomata may be destroyed by electrolysis, by caustics, by the galvano- or thermo-cautery, by freezing with liquid air, or solid carbon dioxide, and by radiotherapy; and the choice of any one of these will depend largely upon the size, number, and situation of the growths. Lesions of moderate size may often be successfully dealt with by freezing with solid carbon dioxide, the amount of pressure employed and the length of the application being regulated by the size of the tumor. Thirty to forty seconds with moderately firm pressure are usually sufficient in the smaller growths. When the crust falls, the

freezing may be repeated if the first one has not been sufficient to completely destroy the lesion. They may also be destroyed by electrolysis, inserting both needles in the growth at various points, taking care that they do not touch, using a current of from ten to twenty milliampères; both needles should be irido-platinum or gold-plated to avoid the staining which occurs at the positive pole when steel is used. This is often an effective method, but it is painful and therefore requires an anæsthetic. One of the most satisfactory methods of treatment, when the growths are situated upon the face and of moderate size, is by radium. In a case under the author's observation a few years ago, in which the tumor was situated upon the lip of a six-months-old infant, this agent was employed with the most satisfactory results.

TELANGIECTASIS

Definition.—Permanent dilatation and new formation of cutaneous capillaries usually occurring in circumscribed areas.

Symptoms.—While, strictly speaking, the term "telangiectasis" should be applied only to dilated capillaries, it is also used to designate certain vascular affections characterized by new-formed as well as dilated capillaries.

Capillary dilatation very frequently occurs in connection with certain diseases of the skin of an inflammatory or other nature, such as acne rosacea, lupus erythematosus, circumscribed scleroderma, xeroderma pigmentosum, radiodermatitis, and cicatrices resulting from injury or disease. In acne rosacea the dilated vessels are situated for the most part upon the nose, particularly the alæ, upon the malar eminences, and are usually associated with papules and pustules, the usual inflammatory lesions of that affection; or the telangiectases may occur in these regions unaccompanied by eruption, particularly in those who are much exposed to the weather. The author has in a few instances observed patches made up of very fine capillaries upon the sides of the neck in women much addicted to outdoor sports, which gave rise to considerable disfigurement.

In recent years most extensive telangiectasis has been frequently observed as the consequence of X-ray dermatitis. While it is most common after ulceration, in the scar, it may also occur without any destruction of the skin when X-ray treatment has been prolonged over a considerable period.

Not very infrequently intrathoracic or intra-abdominal disease is associated with arborescent patches of vessels on the sides of the thorax and at the borders of the ribs, owing to interference with the local circulation. Hyde has called attention to the occasional occurrence of telangiectases with Graves's disease.

As an independent affection, telangiectasis may occur as small stellate patches with a small red dot in the centre, from which radiate a number of fine, somewhat tortuous and branched vessels, a variety known as *spider nævus, nævus araneus, spider cancer.* It occurs

somewhat more frequently in children than in adults, usually as a single patch, although there may be several and in rare instances many patches. Crocker observed a case in which the lower two-thirds of the face and the forearms and hands were covered, and a still more extensive case has been recorded by Mandelbaum. The most common situation is the face, although it occasionally occurs upon the trunk. Occasionally the patches disappear spontaneously after a time, but as a rule they continue indefinitely.

A form frequently observed in elderly and old individuals occurs as pin-head- to split-pea-sized crimson or purple flat elevations situated more frequently upon the trunk than elsewhere, although sometimes seen upon the face (*nævus sanguineus, papillary varices*).

As "inherited hemorrhagic telangiectasis," Osler has described an affection characterized by numerous telangiectases situated in the skin and mucous membranes associated with frequent and at times severe or even dangerous hemorrhage. The disease exhibits a markedly familial character, two or more members of the family being affected. Although rare, Gjessing, who has recently reported a marked example, was able to collect from the literature nineteen families in which the malady had been observed.

Etiology.—As already noted, dilatation and the new formation of cutaneous capillaries are frequent concomitants of a number of inflammatory diseases of the skin and of circulatory troubles associated with visceral disease. In the generalized forms it seems probable, as Stokes has recently suggested, that syphilis, plumbism, alcoholism, and other forms of toxæmia play an important rôle in the production of the affection. In the malady described by Osler, heredity is apparently the most important etiological factor.

Treatment.—The most effective and convenient method of dealing with telangiectases occurring in limited areas is to destroy them by electrolysis. A needle attached to the negative pole is thrust through the vessels at a number of points in their course, and a current of two or three milliampères allowed to act for ten to twenty seconds; this is soon followed by blanching and occlusion of their lumen. In the stellate telangiectases (spider nævus), the needle should be inserted in the central dot; a single puncture is usually sufficient, but if it fails to occlude all the vessels the little operation may be repeated after four or five days. In the inherited hemorrhagic telangiectasia the bleeding vessels may be destroyed by cauterization, as advised by Osler. In the very extensive forms but little can be done in the way of their removal.

ANGIOMA SERPIGINOSUM

Synonyms.—Infective angioma; Nævus lupus (Hutchinson).

Definition.—A disease of uncertain nature distinguished by spreading patches of bright-red puncta.

Symptoms.—This affection is of decidedly rare occurrence, some twenty-five cases only having been reported since Hutchinson first

called attention to it in 1890. It is distinguished by annular, crescentic, or retiform patches of bright-red dots, "like grains of cayenne pepper," some of which are slightly elevated, which very slowly but steadily spread in all directions. From time to time new dots appear beyond the borders of the patches, the "infective satellites" of Hutchinson, which become the starting point for new patches. In this manner the disease gradually extends until it occupies considerable areas; in exceptional cases, such as, for example, the one recently reported by Wise, the greater part of the cutaneous surface may be affected. While the patches usually exhibit a more or less noticeable circinate or retiform arrangement, they may be without any definite configuration and may be associated with areas of diffuse redness in which no dots are visible. In a few cases there was slight desquamation, and in others slight atrophy of the skin and scarring occurred. The course of the malady is a slowly progressive one, the patches enlarging almost imperceptibly; occasionally it comes to a standstill for a time and then advances again; or it may slowly disappear, leaving the skin quite normal in appearance. In a few cases moderate itching was noted, but, as a rule, there are no subjective symptoms worthy of note.

Etiology.—Nothing is known concerning its causation. Neither age nor sex seems to have any influence upon its occurrence; it has been observed at all periods of life between infancy and sixty years of age. In a considerable proportion of cases it was associated with some form of vascular nævus, either originating in or near such a lesion.

Pathology.—In White's case Bowen and Councilman found features characteristic of angiosarcoma. Cells of young connective-tissue type were found along the vessels, the capillaries were dilated, and there was proliferation of the endothelium and the perithelium. Darrier, who also examined the case, practically agreed with the findings of Bowen and Councilman and suggested the name "reticulated angioplastic sarcoma" for it. In a study of the histopathology of the very extensive case reported by Wise, already referred to, Pollitzer found a progressive infiltration about the vessels in circumscribed areas in the papillary and subpapillary portions of the corium, with proliferation of the capillaries. The elastic tissue was unchanged. In the epidermis there were secondary changes, such as marked inter- and intra-cellular œdema. He did not regard the case as an angioma, but as a low-grade inflammation affecting primarily the capillary areas of the papillary and subpapillary regions.

Diagnosis.—The affection is to be differentiated from certain forms of vascular nævus, from telangiectases, and from the affection described by Majocchi as "purpura annularis telangiectodes." From nævus it is distinguished by the annular or retiform arrangement of the patches and their steady extension; in telangiectases the vessels are usually clearly visible and usually present a stellate arrangement;

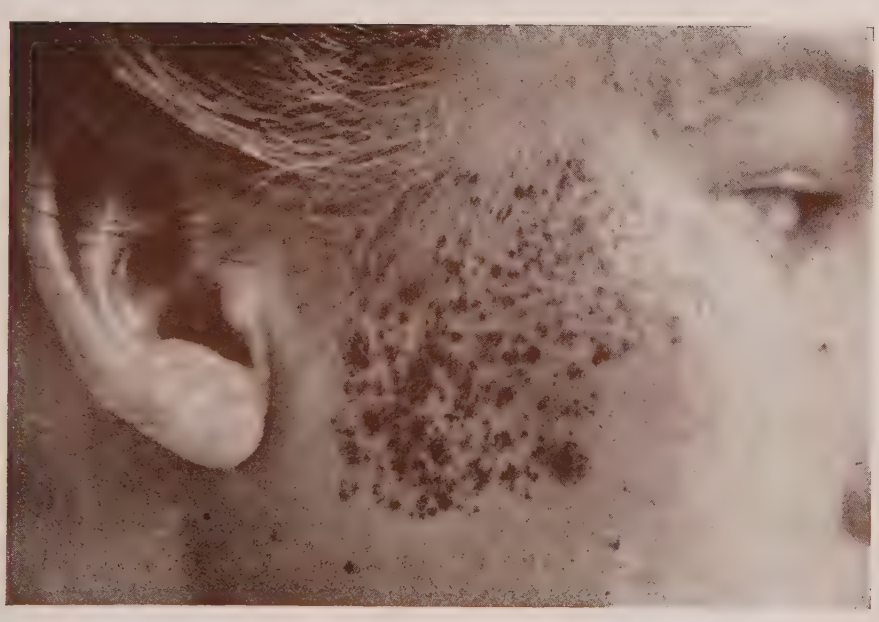


FIG. 204.—Nævus pigmentosus.

from the last-named disease it differs by the absence of purpuric patches and its occurrence upon regions other than the legs.

Prognosis.—The malady usually persists for long periods and steadily invades new areas, although it may in exceptional cases cease to spread and may even disappear.

Treatment.—Treatment is unsatisfactory. Small patches may be destroyed by electrolysis, larger ones by the galvanocautery, but it is apt to reappear at the margins of the scar. In view of the well-known effect of the X-ray upon vascular tissues, it might be worth while to try this agent.

NÆVUS PIGMENTOSUS

Synonyms.—Mole; Pigmentary mole; Fr., Nævus pigmentaire; Ger., Fleckenmal, Linsenmal.

Definition.—A circumscribed increase in the cutaneous pigment frequently associated with an increase of some of the other elements of the skin, usually congenital, but also appearing some time after birth.

FIG. 205.—Nævus pigmentosus.

Symptoms.—The pigmented nævi present great variation in their color, size, shape, numbers, and arrangement. They vary in color from a pale cafe-au-lait to a dark brown or black. They may be no larger than a pin-head, are frequently as large as a coin, and in exceptional cases may cover a considerable part of the body. They are usually round or oval, but are often irregular in outline and vary in number from a single lesion, which is unusual, to scores or even hundreds scattered about on various parts of the skin, in most cases without any definite arrangement, but sometimes arranged in lines. By far the commonest form occurs as one or more smooth patches of variable size (Fig. 204) and shape, of varying shades of brown, little or not at all elevated above the surrounding parts (*nævus spilus*); they may be more or less elevated, with a somewhat uneven, wart-like surface (*nævus verrucosus*) (Fig. 205); or they may be distinctly papillomatous in appearance (*nævus papillomatosus*). In many instances, in addition to the increase in the pigment, there is

a more or less abundant growth of hair, which may be thick and dark, or fine and colorless (*nævus pilosus*) (Fig. 206). Much less frequently the pigmentary changes are accompanied by an increase in the fatty and connective tissues, forming soft lobulated growths, sometimes of considerable size (*nævus lipomatodes*). While the vast majority of pigmented nævi are of moderate size, seldom exceeding

Fig. 206.—Hairy nævus (nævus pilosus).

an inch or two in diameter, in rare cases they may cover a considerable part of the body, as in the so-called "bathing-trunk" nævus, in which the lower part of the trunk, the hips, and the upper part of the thighs are covered by a pigmented, frequently hairy, growth.

In rare instances they exhibit a marked linear arrangement, occurring as one or more bands or lines, sometimes of considerable length,

composed of shot- to pea-sized, smooth, or more frequently horny elevations, limited, as a rule, but not invariably, to one side of the body (*nævus unius lateris, linear nævus, nerve nævus, systematized nævus*). In a case of this kind recently under the author's observation in the Philadelphia Hospital, a band of small wart-like lesions extended down the posterior surface of the right thigh, following roughly the course of the sciatic nerve (Fig. 207).

Fig. 207.—Nævus unius lateris.

Etiology. — Pigmented nævi are extraordinarily common; indeed, there are very few, if any, individuals who do not possess one or more of them. They are somewhat more frequent in women than in men and are usually congenital, although there is but little doubt that they also appear after birth, even some years after.

Pathology. — In the smooth nævi the epidermis shows but little change beyond an increase in pigment in the lower cells (Fig. 208); in those with warty surface there is more or less hyperkeratosis. The papillary and subpapillary portions of the corium are occupied by nests and columns of round cells resembling the epithelial cells of the rete, but smaller and without prickles, with large centrally situated vesicular nuclei. Except in the deeper portions of the corium they are closely packed together without any intercellular substance and contain brown granular pigment (melanin), which Ehrmann believes they obtain from certain other pigment-bearing cells which he calls "melanoblasts." The great majority of the cells contain but a single nucleus, but a few, larger than those already described, are multinucleated (nævus giant-cells). Demiévill and von Recklinghausen believed the nævus cells to be endothelial, having their origin in the endothelium of the blood vessels and lym-

phatics; but the more recent studies of Unna, Gilchrist, W. S. Fox, and others seem to have established their epithelial character and epidermal origin. Fox, however, believes that certain nævi in which the typical nævus arrangement of the cells is absent, may be of mesoblastic origin. The author is very decidedly in agreement with the view that they are epithelial growths, and that therefore the pigmented malignant neoplasms which occasionally originate in them are carcinoma and not sarcoma.

The histological changes found by various observers in linear nævus

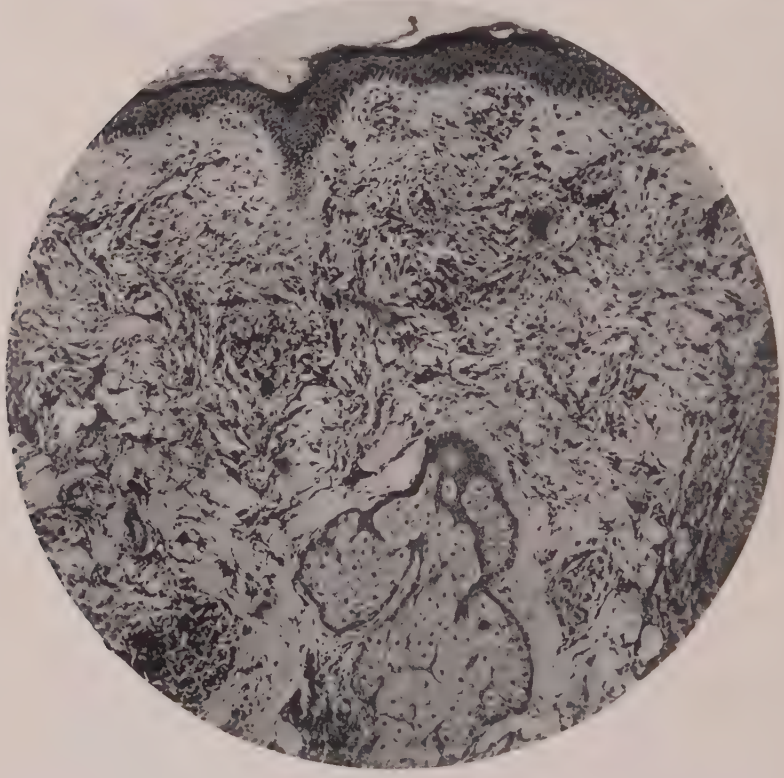


Fig. 208.—Flat, smooth pigmented nævus. The corium is filled with large spindle-shaped and branching cells containing brown pigment.

have been by no means uniform; indeed, they differ so much that it is difficult to believe that they have all been describing the same affection. In one of the two cases examined by Unna there was little beyond some hypertrophy of the prickle layer of the epidermis, with some hyperkeratosis; in the other there were evidences of inflammation, the lesion resembling histologically a papule of eczema (Fig. 209).

A number of theories have been proposed to explain the peculiar distribution of linear nævus. Bärensprung, who first directed attention to the subject, thought they followed the nerves, hence the term

"nerve nævus" sometimes applied to them. Other theories are that they follow the blood-vessels; the lines of cleavage of the skin; the lines which bound the several nerve areas (Voigt's lines); that their distribution is metameric, and, lastly, that they follow the embryonic sutures; none of these, however, fits all the cases. Montgomery believes that the last is the most satisfactory.

Diagnosis.—Their usually congenital origin and their general appearance are so distinctive in most cases that the diagnosis is usually made with ease.

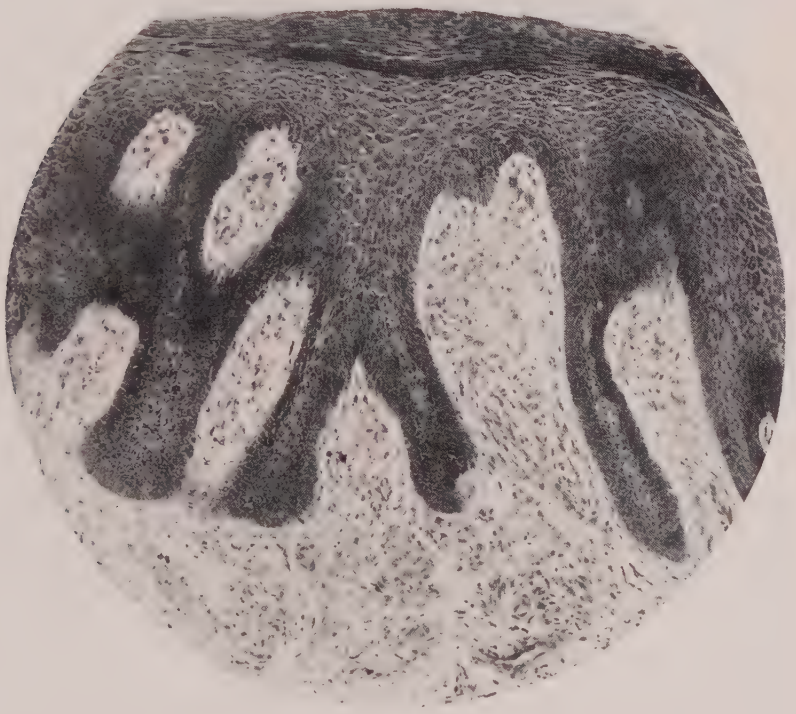


FIG. 209.—Nævus unius lateris. Interpapillary processes of the rete mucosum greatly elongated; numerous connective-tissue cells in the papillæ of the corium. Section from case shown in Fig. 207.

Prognosis.—In the great majority of cases nævi remain stationary after their appearance, but they occasionally become darker and more hairy with years; in exceptional cases they increase in size. At times when situated in regions where they are subject to constant irritation or frequent injury, as in the face where they are frequently cut in shaving, or less frequently spontaneously, they undergo malignant degeneration. Growths of this kind (nævocarcinoma) are among the most rapidly fatal of all the malignant neoplasms.

Treatment.—Small, flat, hairless or downy lesions may be readily and conveniently destroyed by freezing with solid carbon dioxide.

Those containing stiff hairs usually diminish greatly in size or even disappear after removal of the hairs by electrolysis. This method may also be employed to remove the larger lesions. The needle should be thrust repeatedly into the nævus parallel with the surface of the skin, and the current allowed to act until the overlying skin turns white; when the crust falls, after a week or ten days, the operation may be repeated if necessary. They may also be removed by caustics, one of the most satisfactory being trichloracetic acid. This should be painted over the lesion until it turns white, repeating the application after the falling of the crust as often as may be necessary. In large hairy nævi the X-ray, either alone or combined with freezing by carbon dioxide, may be used (Ormsby). When nævi which have been irritated or injured exhibit the slightest signs of growth, they should be excised at once, making sure that every portion is removed.

CARCINOMA CUTIS

Carcinoma may occur in the skin either as a primary or as a secondary affection, in the latter case spreading from adjacent organs or tissues or reaching the skin through metastasis from a focus more or less remote. Primary carcinoma, which is more frequent than the secondary form, and the one with which the dermatologist is chiefly concerned, presents a number of varieties which differ from one another in their clinical symptoms, course, and histopathology.

EPITHELIOMA

Synonyms.—Epithelial cancer; Cancer of the skin; Cancroid; Rodent ulcer.

Definition.—An epithelial new-growth characterized by destructive ulceration and a marked tendency to recurrence after removal.

For purposes of description, epithelioma (Plate XXXVI) may be divided into two varieties—the flat or superficial, and the deep or infiltrating; but it should be kept in mind that this is a somewhat arbitrary division and that often no sharp line can be drawn between these two forms, since the superficial variety may after a time invade the deeper tissues.

Flat or superficial epithelioma may begin in a variety of ways. It frequently commences as a dirty yellow or brownish pea- to finger-nail-sized scaly or horny patch, senile keratosis, situated most frequently upon the face, occasionally upon the neck, the external ear, or back of the hands. Such patches frequently show but little change for years beyond a slight increase in thickness, but sooner or later the skin about the edges of the crust becomes slightly reddened, and when the crust is forcibly removed a shallow ulcer with a finely granular surface is revealed, which slowly but steadily grows in circumference, but usually remains comparatively shallow.

It may begin as a small pinkish, opaque, or bluish-white, partly translucent nodule, or two or three small confluent nodules, which

PLATE XXXVI

Epithelioma.

very slowly increases in size, and after a year or two, or it may be many years, begins to ulcerate, the ulcer being sharp-cut with slightly infiltrated "bead-like" border. This form of ulcer was first described by Jacob of Dublin, hence sometimes called Jacob's ulcer, but it is better known, especially in England, as rodent ulcer. This form is frequently very superficial, but it steadily advances and in the course of years may produce the most extensive destruction, destroying in its progress not only the soft tissues, but bone and cartilage. (Fig. 210.)

Fig. 210.—Epithelioma (rodent ulcer).

Under the name "crateriform ulcer," Sir Jonathan Hutchinson described some years ago a variety of epithelioma resembling in some of its features rodent ulcer, but differing from it in the much more rapid course which it pursues, in the greater depth of the ulcer, and the eventual implication of the lymphatic glands. This form may develop from the ordinary so-called rodent ulcer or it may occur as a primary lesion.

An unusual form of flat epithelioma to which Danlos first directed attention, and for which I suggested a few years ago the name

"morphœa-like epithelioma," begins as a small rounded or oval yellowish or yellowish-pink, sometimes atrophic, at other times slightly infiltrated, patch, the borders of which are traversed by numerous fine vessels; after a variable duration, ulceration occurs, usually beginning at the border of the patch. (Figs. 211 and 212.)

Occasionally epithelioma begins as a small wart-like or papillomatous nodule with an infiltrated base, which slowly increases in size, the papillæ enlarging until a cauliflower-like vascular growth is produced. After a variable time the centre of the papilloma ulcerates, and a round, oval, or irregularly shaped ulcer is produced with firm infiltrated base and border. The lesion, while usually sessile, may have a distinct pedicle. Although superficial in the early stages, these growths after a time commonly extend to the deeper tissues, and the neighboring lymphatic glands become involved in the cancerous

FIG. 211.—Morphœa-like epithelioma. Yellowish-white patch with small point of ulceration at border.

process. In a certain proportion of cases the papillomatous epithelioma is a development of the flat variety, the papilloma developing either before or after ulceration.

The deep-seated or infiltrating form of epithelioma may be the sequel of the superficial form, or it may begin as an intradermic or subcutaneous nodule which steadily increases in size until it reaches the dimension of a small nut, when softening and ulceration occur. The resulting ulcer is seated upon an extensively infiltrated base and its edges are firm and thick. The ulcer rapidly extends in circumference and depth, and involvement of the lymphatic glands is apt to occur early.

While in most cases the lesions of epithelioma are single, it not uncommonly happens that there are two or more, multiple lesions being especially common in that variety which follows senile kera-

tosis and in the cancers which occur in the workers in tar, paraffin, and similar substances.

The course pursued by the flat or superficial varieties of epithelioma is usually a very prolonged one; they may exist for years as quite insignificant lesions, as many as ten, fifteen, or twenty years before they produce any considerable degree of ulceration. Eventually, however, extensive destruction of the skin is produced unless the progress of the disease is stayed by treatment. In the cases in which infiltration begins, however, the lesion loses its comparatively benign character and becomes rapidly destructive.

The deep forms pursue a much more rapid course than the superficial

FIG. 212.—Morphœa-like epithelioma, side of thorax.

and may cause extensive destruction of tissue in the course of a few months.*

The superficial variety of epithelioma is situated, in the largest proportion of cases, upon the face, usually in the upper half, this being especially true of the variety known as rodent ulcer, the favorite sites being the cheek, the inner canthus, and the nose. Less frequently it occurs upon the neck, the ear, and the hands. The trunk, while not immune, is much less frequently attacked.

The lower lip is a frequent site, the lesion beginning as a superficial erosion, fissure, or small nodule which eventually undergoes

*Implication of the lymphatic glands and metastases are very infrequent in the superficial variety, while these always occur sooner or later in the deep forms.

ulceration. While often, although by no means always, of the superficial type in the beginning, infiltration of the deeper tissues occurs sooner or later with involvement of the lymphatic glands beneath the jaw. In this situation epithelioma is frequently the sequel of a long-standing leukoplakia.

NÆVOCARCINOMA

Pigmented nævi may undergo cancerous change, giving rise to a form of cutaneous cancer which presents a number of special clinical and histological features. As the result of traumatism, often slight, or from some unknown cause, the nævus begins to increase in size and after a variable time, usually short, ulceration takes place, speedily followed by enlargement of the neighboring lymphatic glands, the appearance of secondary nodules in the immediate neighborhood of the primary lesion, or at points some distance from it, and shortly by widespread metastases. The color of the primary and secondary growths, according to the amount of pigment in them, varies from a light brown to a slaty blue or black, and the degree of malignancy seems to be in direct proportion to the amount of pigment present. This represents one of the most malignant and rapidly fatal of all the forms of cancer. Recurrence promptly follows its removal, metastases are usually numerous and widespread, and it runs a rapidly fatal course.

CARCINOMA LENTICULARE

or lenticular cancer is usually a secondary form, although it may exceptionally occur as a primary affection. It is in most cases secondary to cancer of the female breast, and occurs as discrete and confluent, shot- to pea-sized and larger, pinkish or red, very firm nodules seated in the skin, usually over the anterior and lateral regions of the chest. With the progress of the disease the nodules increase in number and size, are thickly crowded together, and in some instances coalesce to form an extensive sheet of dense infiltration with a red or purplish, uneven surface, which may encase the chest so firmly as to interfere with the movements of respiration, the so-called *cancer en cuirasse*. In the course of some months softening and ulceration of the nodules take place, extensive ulcers are formed, visceral metastases occur, followed by cachexia and death. In exceptional cases the nodules are disseminated over a wide area, as in the cases reported by Morrow and Pollitzer, and may appear some distance away from the primary focus. In a case under the author's observation some years ago a nodule was found on the back beneath the scapula, the primary focus being in the breast. Owing to blocking of the lymph channels and consequent interference with the circulation of the lymph, the arm of the affected side is sometimes enormously swollen. The glands in the axilla are likewise more or less enlarged. The disease is usually accompanied by pain of a stabbing or burning character; or in exceptional cases severe itching is a pronounced and distressing symptom, as in the case reported by Pollitzer, already referred to.

CARCINOMA TUBEROSUM

or tuberose cancer of the skin is a rare form and is usually secondary to cancer in some other region, although it sometimes occurs as the primary disease. It begins as deep-seated intrademic or subcutaneous nodules, which grow with more or less rapidity until they reach the size of a nut or an egg, the skin over them becoming red or purplish as they approach the surface. After some months, softening and ulceration take place and invasion of the viscera is not uncommon. The number of nodules present may be considerable, and when numerous and closely aggregated they may form large nodular masses. The affection usually runs a rapidly fatal course.

Etiology.—Cancer of the skin, like other forms of the malady, is a disease of middle and advanced age; it is very infrequent before thirty years of age and most common after fifty, although in rare cases it has been observed in young subjects. Some years ago the author saw a rodent ulcer in a boy fourteen years of age, and quite recently Sequeira has reported an example of the same affection in a boy twelve years old. It is about twice as frequent in males as in females. While heredity is no longer believed to play the prominent rôle formerly attributed to it in the causation of cancer, yet the disease seems to occur with unusual frequency in certain families, and recent experimental studies in the lower animals, such as mice, seem to support the view that heredity exerts a direct influence upon its incidence.

Many of its features suggest the possibility of its infectious origin, but all attempts to demonstrate an infecting organism have thus far failed, although its discovery has been repeatedly announced.

The number of cases in which epithelioma has followed directly upon and at the site of a wound is so considerable that it is difficult to deny a causal influence to traumatism. The author has seen so many instances of this that he is fully convinced of the relationship between the two.

Long-continued irritation, whether of a mechanical or chemical kind, or such as results from certain chronic inflammations of the skin, is one of the most powerful of the causes which predispose to the malady. Examples of this are to be seen in the epithelioma of the lower lip which occurs in smokers, in the so-called chimney-sweep's cancer resulting from the irritation produced by soot, and in the closely related variety which occurs in workers in paraffin and tar.

It occasionally follows lupus vulgaris and lupus erythematosus, more particularly the former, and occurs in a certain proportion of cases in cicatrices, especially those which follow burns. Maxwell states that epithelioma is unusually frequent in the Vale of Cashmere, a large proportion of the cases occurring upon the abdominal walls and thighs, in the scars of burns produced by a small charcoal brazier, "Kangri," which the natives are in the habit of carrying beneath their clothes, filled with burning charcoal.

Senile and other forms of keratosis, such as cutaneous horns and especially arsenical keratosis, frequently serve as the starting points for epithelioma.

The dermatitis which follows long-continued or frequently repeated exposure to the sun's rays and the X-ray may be followed by cutaneous cancer.

Pathology.—Carcinoma is an epithelial neoplasm which may have its origin in any epithelial tissue. In the skin it may arise from the Malpighian layer, from the basal-cell layer of the epidermis, or from the columnar cells which line the hair-follicle and sweat glands.

Epithelioma may be divided into two classes according to the type of cell present. In one the growth is composed of squamous epithelium derived from the Malpighian layer; in the other it is made up of columnar-celled epithelium derived from the basal-cell layer of the epidermis, from the cells of the hair-follicles, or from the sweat glands. In the squamous-celled type lobulated masses and branching tracts of squamous epithelium still retaining traces of the prickles grow down into the corium from the epidermis. In the centre of many of the lobules are peculiar bodies composed of concentrically arranged flattened horny epithelial cells, the so-called "cell-nests" or "pearly bodies." Many of the cells undergo degeneration, which transforms them into large round or oval bodies with a thick homogeneous or sometimes laminated wall and a central cavity containing one or several nuclei. Such cells were at one time thought to be protozoa, but this was soon disproved. Cell-inclusions are frequently seen, the result of endogenous cell-formation.

This form is found typically in epithelioma of the lip, in that which follows senile and other keratoses, and in the tar and paraffin cancers.

In the basal-celled form (Fig. 213), of which rodent ulcer may be taken as the type, long, branching, cylindrically shaped processes composed of small, columnar or cylindrical epithelial cells with scanty protoplasm extend down into the corium. Sometimes these exhibit a retiform arrangement or many form alveoli. The peculiar bodies known as "pearly bodies" and the forms of hyaline degeneration common in the squamous-cell variety are absent as a rule, but degeneration of the central portion of the cell-masses occasionally occurs, forming cystic cavities containing a small quantity of granular débris.

In the corium about the epithelial masses is a more or less dense cellular exudate composed of lymphoid and plasma cells. The elastic tissue disappears completely in the regions invaded by the neoplasm.

Involvement of the neighboring lymphatic glands and metastases occur in the squamous-cell cancers, but are rare, or, if they occur at all, occur late in the basal-cell variety.

Nævocarcinoma or pigmented carcinoma of the skin was formerly regarded as sarcoma, but Unna's studies of nævi and those of Gilchrist have demonstrated that the neoplasms which originate in them are epithelial. These growths exhibit an alveolar structure, the alveoli

being filled with large epithelial cells, many of which contain several large nuclei. The pigment which distinguishes them is found in the connective tissue and in and between the epithelial cells. In some instances it is so very abundant that it is difficult to make out the structural details of the growth. According to Unna, the hyaline and other forms of degeneration which occur in epithelioma are not found in nævocarcinoma. Secondary growths in the skin and widespread metastases are common and usually occur early.

Diagnosis.—The age of the patient, who is usually fifty or more; its situation upon the face, often on the nose or lower lip; the history

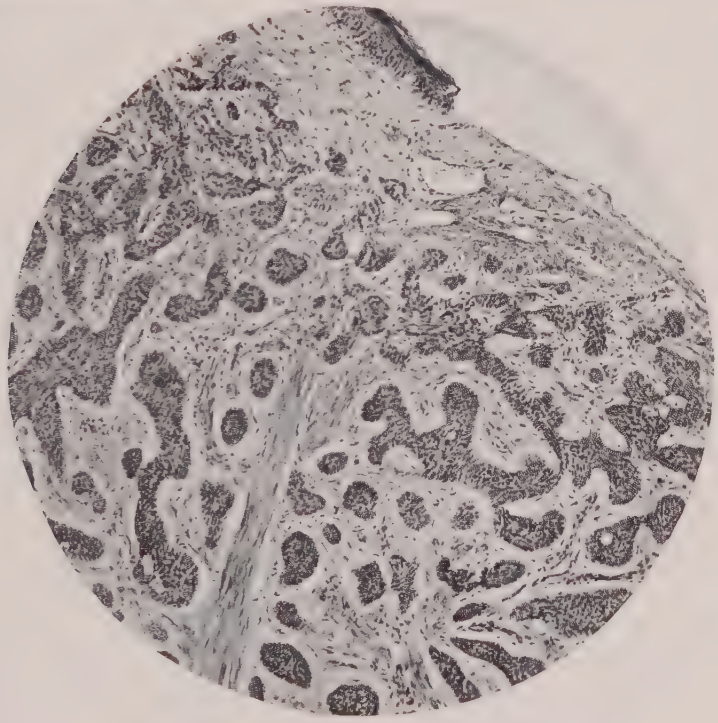


Fig. 213.—Epithelioma baso-cellulare.

of a horny patch or wart-like nodule having preceded the ulcer for a considerable time, often a number of years; its slow growth, several years often elapsing in the flat superficial forms before an ulcer of any dimensions is formed; and the peculiar "bead-like" border which commonly surrounds it, all are features so characteristic of epithelioma that the diagnosis is usually readily made.

The initial lesion of syphilis, when situated upon the lower lip, may at times bear considerable resemblance to epithelioma, but the induration of the ulcer, the early and marked swelling of the submaxillary glands, and the presence or early appearance of a generalized eruption (which should always be looked for, even when denied by

the patient), usually enables a positive diagnosis to be made. Examination of scrapings from the suspected ulcer for the spirochæta with dark-ground illumination is a valuable aid in the diagnosis in such cases.

Epithelioma and the ulcerating lesions of late syphilis may at times be confounded, but the lesions of the latter are often multiple, while the former is usually single; the latter are often crescentic, reniform, or serpiginous, while epithelioma rarely assumes such a shape; and the course of the syphilitic ulcer is usually much more rapid. In doubtful cases a Wassermann test should not be omitted; an unnecessary surgical operation may sometimes thus be avoided. Epithelioma is sometimes mistaken for lupus, a mistake which is not likely to occur if any care is exercised. The latter disease begins, in the vast majority of cases, before puberty and practically never at the age at which epithelioma is most common; and the reddish-brown flat nodules and the very slow ulceration which characterize it are in most cases quite unlike anything which is seen in epithelioma.

Prognosis.—The prognosis of epithelioma is always serious, but judicious treatment in the more superficial varieties is usually effective when begun early. In advanced cases, however, treatment frequently fails to stay the ravages of the disease, and death follows. In the deep infiltrating forms the prognosis is most grave. In the pigmented epithelioma originating in a nævus, death usually results within a year or two and frequently earlier.

Treatment.—No internal remedy is as yet known which exercises any demonstrable effect upon the course of carcinoma. The only effective treatment is local treatment, and the earlier this is begun the more likely is it to be effective.

When the lesion is favorably situated, *i.e.*, when it is in a locality in which it may be completely removed, such as the lip, excision is without doubt the remedy of choice in many, if not in most, cases. The lines of the incision should always include a considerable part of apparently sound skin in order to insure the removal of all the disease. When small, it may be removed with the curette, but unless this is followed by thorough cauterization in order to completely destroy it, it is not a method which can be relied upon.

A large number of caustics have been recommended at one time or another for the destruction of the growth, and some of them are at times most useful when employed with discrimination in properly selected cases; the most generally useful and effective of these are arsenic, chloride of zinc, and pyrogallol. Arsenic is a very efficient caustic, exercising to some degree a selective action upon the neoplastic tissues, but gives great pain and frequently produces a most pronounced inflammatory reaction, accompanied by great swelling, particularly when used in the neighborhood of the eye. It should not be applied to extensive surfaces lest arsenical poisoning follow. It may be conveniently employed as Marsden's paste, which is com-

posed of equal parts of powdered gum arabic and arsenic trioxide, mixed with enough water to make a rather stiff paste; this may be applied for twenty-four to forty-eight or seventy-two hours, the time depending upon the depth of the lesion.

The author's own preference is for pyrogallol employed as a 40 per cent. plaster, made as follows:

℞

Pyrogallol. .....gr. xcvj (6.0)
Cerat. resinæ .....℥ ii (8.0)
Bals. Peruvian. .....q. s. ut emplast. ft.

M.

Before applying the plaster, the surface of the lesion should be lightly rubbed for a few minutes with a stick of caustic potash until the patient complains of slight pain; the potash should then be neutralized with dilute acetic acid, after which the plaster may be applied thickly spread on a piece of kid slightly larger than the lesion, and renewed twice a day. After four to five days its use should be suspended, and a pad of gauze or lint wet with a saturated solution of boric acid and covered with oiled silk should be applied continuously for twenty-four to forty-eight hours, at the end of which time the slough will have come away. A 2 per cent. salicylic acid ointment may now be applied until cicatrization is complete. Some of the best results, both cosmetic and curative, the author has ever seen in the treatment of superficial epithelioma have been obtained by this method. The destruction of the growth is usually complete and the resulting scar is smooth and pliable.

With the exception of excision, the X-ray and to a less extent radium have largely superseded all other methods of treatment, and there is no longer any doubt about the efficacy of these agents in the treatment of the more superficial forms of cancer of the skin. In the so-called rodent ulcer and in other forms of baso-cellular epithelioma the X-ray is in most cases curative, and it is frequently effective in the flat and superficial forms, such as follow senile keratosis. In the deeper and infiltrating forms, however, it often fails. In such cases the best results are to be obtained by excision followed by X-ray treatment. The X-ray may be employed in one of two ways: An exposure of ten to fifteen minutes may be given every three or four days until a mild erythema is produced, when the treatment should be suspended until the reaction has subsided; or the so-called massive-dose method may be employed, in which an erythema dose is given at once and not repeated until the erythema has disappeared. Both methods have their advocates, but the latter is preferred by many Röntgenologists at the present time.

PAGET'S DISEASE

Synonym.—Malignant papillary dermatitis.

Definition.—A malignant disease of the skin confined in the great majority of cases to the nipple and areola of the female breast, char-

acterized by an eczematoid inflammation, followed in time by carcinoma of the mammary gland.

This affection was first described in 1874 by Sir James Paget in a paper published in the St. Bartholomew Hospital Reports. His account of the disease was based upon fifteen cases, all occurring in women between the ages of forty and sixty. It began with an eczematoid inflammation of the nipple and areola, accompanied by vesicles, an abundant oozing of a sticky fluid, and crusts. In a few instances the eruption was dry and scaly, resembling to some degree psoriasis. In all these fifteen cases the cutaneous inflammation was followed within one or two years by mammary cancer. Since the publication of Paget's paper the disease has been studied by Butlin, Thin, Duhring and Wile, Crocker, Wickham, Hirschel, and others.

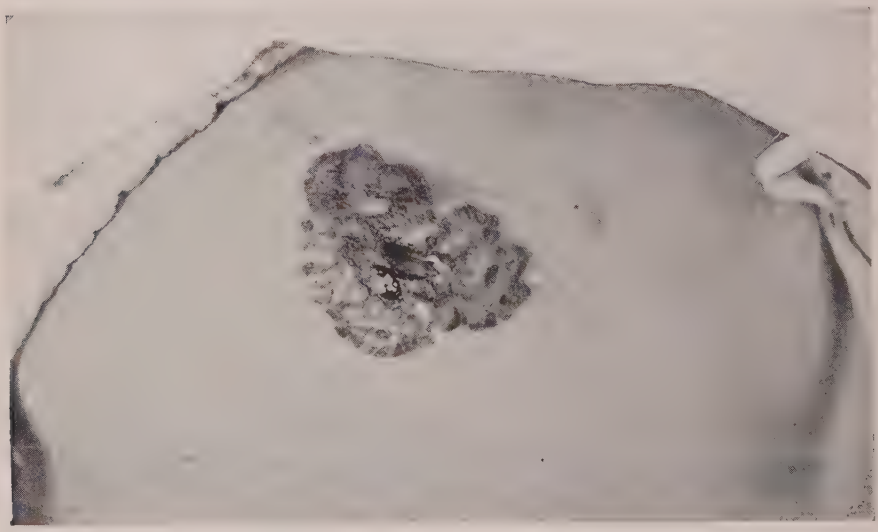


Fig. 214.—Paget's disease.

Symptoms.—The disease is in the great majority of cases found upon the female breast (Fig. 214). It begins upon the nipple, spreads to the areola and occasionally beyond it, and exceptionally may cover the skin of the entire gland. It is as a rule unilateral, and is found more frequently upon the right than upon the left breast. It begins upon the top of the nipple with a small horny crust, firmly attached to the underlying part, and beneath this crust there is at first a reddened surface, which after a time becomes superficially ulcerated and fissured. In time the areola is invaded; it becomes red and scaly, or moist, discharging a yellow, viscid fluid, which dries into yellowish crusts. In the fully developed disease the affected parts are red, with a finely granular, in places superficially ulcerated, surface from which more or less oozing takes place. The diseased area is usually irregularly rounded in shape, with well-defined borders, the nipple in the centre,

differing in this respect from the ill-defined margin present in patches of ordinary eczema of this region. Small bluish-white islands of epidermis are scattered over this red and oozing surface, evidences of an attempt at repair. Early in the disease a parchment-like induration, likened by Paget to a penny felt through a cloth, occurs. Itching and burning, frequently severe, and often coming on in paroxysms, are usually present from the very beginning. Retraction of the nipple is a characteristic feature in many cases; it may be present early and may be followed by its complete disappearance. On the other hand, the nipple may remain prominent throughout the disease.

After a period varying from some months to several years carcinomatous change appears, usually beginning upon the ulcerated surface as more or less well-defined nodules, or, what is more frequent, as a well-defined lump in the gland tissue, the symptoms then being those usually found in carcinoma of the breast. Deep-seated, stabbing pains, destructive ulceration, and swelling of the axillary lymphatic glands are common symptoms at this stage of the disease.

Exceptionally it begins elsewhere upon the breast than upon the nipple, as a red, scaly patch with well-defined borders, accompanied by burning and itching, the whole resembling very closely ordinary eczema. The subsequent course of such patches is, however, the same as in those cases in which the affection begins on the nipple and areola.

While the seat of the disease is in the great majority of cases the female breast, Forrest has reported a case in which a chronic "eczema" situated upon the breast of a man seventy-two years of age was followed by carcinoma.

The mammary gland is not, however, the only seat of the affection; it may occur upon other portions of the cutaneous surface. Shortly after the appearance of Paget's communication, in which the disease was described for the first time, other observers began to report isolated cases of an affection presenting the same clinical and histological features as those observed upon the female breast, and up to the present time some eighteen or twenty examples of extramammary disease are on record. The back, the arm, the scrotum and penis, the buttocks (Fig. 215) have all been the site of the malady. It is worthy of note that of eighteen cases of extramammary Paget's disease collected by the author in 1910, no less than nine were situated on the external genitalia or in regions immediately adjacent thereto, and five of these nine were situated on the glans penis. These extramammary cases differ but little, if at all, from the disease as found upon the breast.

It is a somewhat remarkable fact that in no less than 75 per cent. of all the cases observed the right breast was affected. With very few exceptions, it is confined to one side.

The average time at which cancer of the mammary gland appears

is from six to seven years after the first cutaneous symptoms, although this period varies within wide limits. In the fifteen cases which served as the basis of Paget's account of the disease, cancer developed in all within two years, in most of them at the end of one year. Jamison observed a case in which the first symptom of cancer appeared twenty years after the beginning of the malady, while Duhring has reported one in which a period of ten years elapsed before carcinoma appeared.

Etiology.—Age and sex are important predisposing causes. Wickham found that almost 53 per cent. of the twenty-three cases collected by him occurred between the ages of fifty and sixty. It is practically confined to women, its occurrence in men being altogether exceptional, and in most cases it is observed in those past the meno-

Fig. 215.—Paget's disease of the buttocks.

pause, although it may occur very much earlier than this period. Repeated or long-continued irritation of any sort, no doubt, plays an important rôle in the production of the disease. The numerous slight injuries inflicted upon the nipple during nursing are not uncommonly its starting point. At one time it was regarded as due to the invasion of the skin by psorosperms, but this was soon shown to be erroneous, the so-called psorosperms being nothing more than degenerated epithelium.

Pathology.—There is considerable divergence of opinion among those who have studied its pathology concerning the nature of the malady and the character of the histological changes present. Butlin, who examined the cases upon which Paget based his early description, considered the changes in the epidermis as the same in character as those in the ducts. Thin, who proposed the name malignant papil-

lary dermatitis for the malady, believed it due to cancerous change beginning near the mouths of the milk-ducts, spreading thence to the mammary gland. In 1889 Darrier announced that the affection was a psorospermosis, and that the peculiar round bodies found in the epidermis were protozoa; in this opinion he was supported by Wickham. Subsequent investigation, however, soon proved the erroneousness of this opinion. Jacobaeus thinks it carcinoma which has its origin in the epithelial lining of the excretory ducts of the gland; he regards the peculiar cells in the epidermis, not as degenerated rete cells, but cancer cells which have emigrated into the epidermis from the ducts; Hirschel is of the same opinion. Unna looks upon it as a disease *sui generis*, neither cancer nor eczema, which leads only

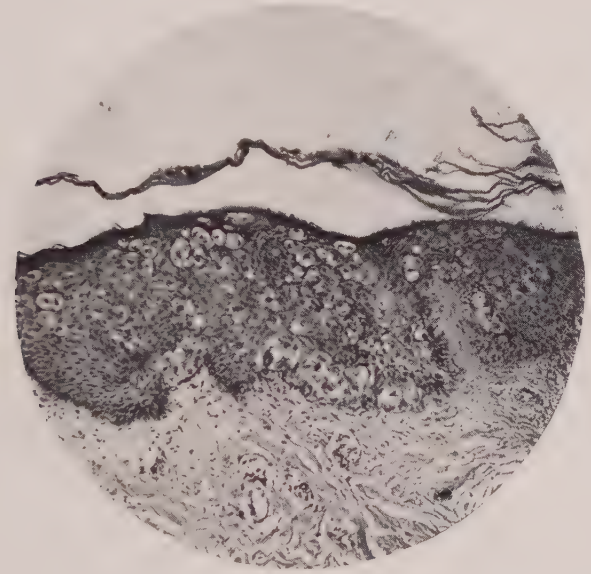


FIG. 216.—Paget's disease of the breast. Rete mucosum greatly broadened and filled with numerous large vacuolated epithelial cells.

indirectly to cancer. Although at first inclined to agree with this view of Unna, the author's studies of the malady lead him to the conclusion that it is carcinoma from the beginning and that the peculiar epitheliar cell-changes should be regarded as cancerous in their nature.

The earliest changes are found in the epidermis. The rete is greatly broadened and many of its cells exhibit peculiar and characteristic changes (Fig. 216). They have lost their prickles and are enormously enlarged, these changes being due, according to Unna, to intracellular œdema. They resemble round or oval cavities in which lie one, two, or three large well-stained nuclei. When a number of adjacent cells undergo this transformation they produce a coarse mesh-work in which are scattered nuclei. At times these areas of cell degeneration are separated from one another by rows of apparently

normal cells in such a manner as to give rise to an alveolated appearance of the rete.

In the very early stages of the disease there is but little change in the corium, but later the papillary and subpapillary regions are occupied by a dense cellular exudate composed of lymphoid cells, plasma cells, and a considerable number of *mastzellen*. Unna describes this exudate as made up entirely of plasma cells, a pure plasmoma, which acts as a barrier to cancer extension, but in all the sections which the author has examined this was not found to be the case, but lymphoid cells were always present along with plasma cells.

The cancerous changes which take place in the milk-ducts and in the gland tissue in the final stages of the disease do not differ from those present in ordinary cancer of the breast.

Diagnosis.—In the early eczematoid stage the differentiation of Paget's disease from eczema of the areola and nipple, the malady for which it is most likely to be mistaken, may at times be extremely difficult, but the former occurs in the majority of cases in those past the menopause, while the latter is seen most frequently during the child-bearing period and especially during lactation.

In Paget's disease the border of the patch is sharply circumscribed and at times slightly elevated, and upon palpation is found to be slightly indurated, while in eczema the patches are apt to be diffuse and without induration. In Paget's disease the surface of the patch is bright red, granular, with superficial ulcers here and there, while in eczema ulceration is never present.

When it occurs in regions other than the breast a positive diagnosis may be impossible in the early stages without a biopsy.

Prognosis.—The prognosis is always serious, but if treatment is instituted early a cure may take place. In cases which have existed for any length of time carcinoma of the gland is almost certain to follow, and the prognosis is then that of cancer of the breast.

Treatment.—In the early stages of the affection trial may be made of the X-ray or of radium and a symptomatic cure may be obtained. In a few instances permanent cure has followed the employment of the former. In cases which have existed for some time, or if there is the slightest induration in the tissue of the mammary gland, complete removal of the breast should be advised without further delay.

XERODERMA PIGMENTOSUM

Synonyms.—Dermatosis Kaposi; Melanosis lenticularis Progressiva; Liodermia essentialis cum melanosi et telangiectasia; Atrophoderma pigmentosum; Epitheliomatose pigmentaire.

Definition.—A chronic malignant disease distinguished by freckle-like pigmentation followed by atrophy of the skin, telangiectases, and in its final stages, by epitheliomatous tumors.

This remarkable and grave malady was first described by Kaposi, in 1870, his description being based upon two cases observed in Hebra's

clinic. Although a rare condition, more than a hundred cases have been reported since Kaposi first called attention to it.

Symptoms.—Authors differ somewhat in their account of the first symptoms of this affection, most probably owing to the fact that it seldom comes under the physician's observation in its earliest stages.

In a certain proportion of cases the first manifestation of the disease is a patchy or diffuse redness, or much less commonly an erysipelatous or eczematoid dermatitis accompanied by vesiculation, situated upon the face and hands. These symptoms are seldom of long duration, a week or two, and are followed by scaling and pigmentation. They are apt to occur in the summer season or after exposure to the rays of the sun; and sometimes disappear in the winter or at least become much less marked. In most cases, however, the first evidence of the disease noted is pigmentation resembling the ordinary freckle, situated upon exposed parts of the skin, the pigmented patches varying in color from a light fawn color to a decided brown and in size from a pin-head to a large pea. These are scattered over the face, neck, ears, upper part of the chest and back, hands and forearms, and grow darker as they grow older. With the progress of the affection they are no longer limited to the uncovered parts of the skin, but appear upon the trunk and lower extremities; and by multiplication and increase in size extensive pigmented areas may eventually be formed. In the early stages this pigmentation like ordinary freckles may diminish sensibly in the winter season and be much more noticeable after exposure to the sun, but eventually it becomes permanent, uninfluenced by season. Similar lesions may also occur upon the mucous membranes of the lip and tongue and upon the conjunctiva.

Coincidently with this pigmentation, or subsequently to it circumscribed white atrophic patches, sometimes smooth and glistening, or wrinkled, and covered with a thin scanty scale, appear on the face and hands, later on other portions of the cutaneous surface, sometimes situated on skin previously normal in appearance at other times in the pigmented areas. These patches increase in numbers and size so that eventually large areas of the skin become atrophic, dry, wrinkled and scaly, giving to the patient's face the appearance of premature senility (senilitas præcox).

Along with this atrophy numerous telangiectases make their appearance either in the atrophic patches or about their borders or in the pigmented areas. These are punctate or stellate, occasionally elevated, in the last case forming small angiomata like those frequently seen in elderly or old individuals; and similar vascular lesions may occur upon the mucous membranes of the lips, gums and conjunctiva.

Keratosic patches resembling those so common on the faces of the aged, wart-like elevations and variously sized tumors of an epitheliomatous character after a variable time, appear the last-named lesions eventually undergoing ulceration.

Conjunctivitis with extreme photophobia and lachrymation is an early and frequent symptom; and this commonly terminates in keratitis with corneal opacity and serious interference with vision. Ectropion is likewise a common condition.

The course and evolution of the malady present a number of variations. While usually steadily progressive, it is marked at times by periods of quiescence or temporary arrest and the sequence of the various symptoms is not always the same. In some cases the atrophic symptoms may be but little marked while in others they may be the best developed, and in some one or the other of them may be either absent or but little pronounced. The epitheliomatous stage may be long delayed or may be absent as in the cases of Duhring, White and others. Its course is a markedly chronic one usually lasting a number of years, although it may terminate within a year or two. In the vast majority of cases it begins in the first two years of life, sometimes as early as the fifth or sixth month, and according to Pick it may be congenital. Exceptions to this, however, are occasionally observed: Falco saw it in several instances in individuals between the ages of seventy and ninety. In these very old cases the keratosic and atrophic symptoms predominate.

In the early stages the patient's general health is unimpaired, but with the appearance of the epitheliomatous stage and ulceration a cachectic condition gradually develops which eventually terminates in death.

Etiology.—Sex is without influence upon its incidence. As already noted the great majority of the cases occur in infancy and childhood. A notable tendency to occur in several members of the same family has been frequently observed, but there is little or no evidence that heredity plays any part in its production. We have no knowledge of the direct causes; but that it is due to some congenital defect in the skin seems most likely.

The resemblance of the changes in the skin to those seen in those much exposed to sun and wind, sailor's skin of Unna, and more particularly, to the changes which result from chronic X-ray dermatitis, suggest the great probability that light plays an important rôle in the causation of the disease, and that it may accordingly be due to a congenital deficiency in the skin of the apparatus intended to protect it from the injurious light rays.

Pathology.—The pathological changes are numerous and varied, as might be expected from the variety of clinical symptoms observed during the course of the disease.

But few observations are at hand concerning the earliest or hyperæmic stage, as there is seldom opportunity to study it during this period. Leukasiewicz found a collection of round cells about the vessels and glands of the papillary and subpapillary layers of the corium and serous infiltration of the papillary body with dilatation of its capillaries and swelling of their endothelia.

In the pigmented patches brown pigment granules are found in great abundance in the epidermis situated both intra- and extra-cellularly, but most abundant in the basal-cell layer. Pigment is also present in the lymph-spaces of the papillary body and in the connective-tissue cells.

In the white areas Ehrmann finds evidences of a high degree of degenerative atrophy. There is thinning of the rete Malpighii with increase in thickness of the horny layer. The most marked changes, however, are found in the cutis in which both the collagen and the elastin have undergone extensive degenerative alterations. Unna, however, does not regard the changes found in these patches as indicative of atrophy, but thinks they resemble much more those found in certain cases of circumscribed scleroderma.

The tumors characteristic of the final stage of the malady are according to most authors epitheliomatous, presenting the usual features of epithelioma, although a considerable number of other new growths have been described by various authors, such as sarcoma, carcinoma and myxoma; and sometimes a mixture of several of these. Pollitzer, who examined a case of Crocker's, found both spindle-celled and round-celled sarcoma with myxoma and carcinoma.

Diagnosis.—The picture presented by Xeroderma pigmentosum is so remarkable and so characteristic when fully developed, that mistakes in diagnosis are not likely to occur. The white patches of atrophy bear some resemblance to those of scleroderma, but the latter are quite firm while the former are soft and pliable, sometimes wrinkled and scaly. The early stage at which they occur and their association with more or less marked pigmentary, vascular and atrophic changes will serve to distinguish the epitheliomatous lesions from those of the ordinary type.

Prognosis.—The prognosis is always serious, death occurring sooner or later, in most cases as the result of the cancerous lesions. The longer, therefore, the tumor stage is delayed the more favorable the outlook for the prolongation of the patient's life.

Treatment.—The treatment is to the last degree unsatisfactory. No internal treatment has yet been found which exerts any influence upon the course of the disease. Hyde found the hygienic management of decided value in three patients under his care. The X-ray has been used with favorable results in the treatment of the epitheliomatous lesions by Hyde, Balzer and Merle, Nicolas and Favre, and others, but this agent has had little or no influence on the other symptoms of the disease.

As a prophylactic measure exposure to the rays of the sun should be avoided, since there is apparently little doubt about the injurious effects of such exposure.

The telangiectases are not new-formed vessels, but the result of a collateral hyperæmia which produces dilatation of the capillaries around and sometimes in the white atrophic patches.

SARCOMA CUTIS

Synonyms.—Sarcoma of the skin; Sarcome cutané.

Definition. — A malignant new-growth composed of embryonic connective-tissue cells occurring in the skin and hypoderm as nodules tumors and flat infiltrations.

Sarcoma of the skin is a rare affection. It may be primary, or secondary to sarcoma of the viscera or other tissues. The lesions may be solitary or multiple, and vary in color from the normal skin through varying shades of red, blue and brown to black, the color depending chiefly upon the degree of vascularity and the presence of pigment. It varies much in its clinical features and course, so that a satisfactory clinical classification is difficult, but for purposes of description the classifications of Perrin or De Amicis, which resemble one another in their principal features, may be followed. De Amicis divides sarcoma of the skin into three groups: First, the non-pigmented forms with a solitary lesion or multiple lesions; second, melanotic forms; third, the idiopathic multiple hemorrhagic sarcoma of the type described by Kaposi.

Non-Pigmented Sarcoma.—Symptoms.—Non-pigmented sarcoma of the skin occurs as rather firm, pea- to nut-sized nodules and tumors situated in the derma or in the subcutaneous tissue. When in the latter situation the skin is usually movable over the lesions at first and is often unchanged in color, but with the growth of the tumors the skin becomes red or violaceous and adherent. They increase in size slowly or rapidly, often slowly in the early rapidly in the later stages, and their number varies from a single one to scores and hundreds. Occasionally the disease exists as a single small tumor for a considerable time, but in most cases new lesions appear sooner or later, either in the immediate neighborhood of the primary one or some distance from it; and in some instances hundreds of tumors appear in every region of the skin constituting a general sarcomatosis. In the earlier stages of the malady some of the tumors occasionally undergo spontaneous involution, disappearing completely; in the later stages ulceration of some of them takes place, although this is infrequent.

The course and evolution of the affection varies a good deal. It may remain without much change for months or even a year or two; but usually the tumors multiply, and increase in size, visceral metastases occur involving the lungs, kidneys, spleen, liver and brain, and death speedily follows. Unlike carcinoma, sarcoma rarely invades the glandular system; when it does, it does so only in its latest stages.

Occasionally sarcoma of the skin follows a visceral sarcoma; and in that event the tumors are usually numerous and widely distributed. In a woman, about forty years of age, under my observation some years ago, who had been ill for some months with obscure symptoms, hundreds of pea- to cherry-sized nodules suddenly appeared in the skin and hypoderm along with urgent dyspnœa; death

followed in a short time, and the autopsy revealed a sarcoma as large as a small orange in the left kidney.

The affection described by Hutchinson as "recurrent fibroid of the skin" was regarded by Crocker as a form of spindle-celled sarcoma. It usually begins on the lower extremities and spreads slowly. Removal is followed by speedy recurrence; eventually it becomes generalized, ulceration takes place, and death follows.

Not uncommonly cases intermediate between those above described and the hemorrhagic sarcoma of Kaposi occur in which some of the symptoms of both forms are present. In the number, distribution and evolution of the lesions they correspond with the former, but they are more or less pigmented like the latter. Such pigmented forms are to be strictly separated from melanotic sarcoma; the pigmentation is due to the deposit of blood pigment in the tissues and not to melanin which is found in the melanotic variety, and they are much less malignant.

Melanotic Sarcoma.—This variety of sarcoma, which represents one of the most deadly of all the malignant growths, when it occurs as a primary affection in the skin, begins in most cases in a pigmented nævus which may have existed for many years without showing any signs of growth; or it may be secondary to a sarcoma originating in some normally pigmented tissue such as the choroid. It may begin as a small round or oval, brown or black tumor frequently not larger than a large pea, as a smooth brown or slate-colored non-elevated pigmentation, or as a flat verrucous pigmented patch. In the beginning it is apt to grow slowly, but after a period varying from some months to a year or two, usually as the sequel of some irritation or slight traumatism, it rather suddenly begins to increase in size; secondary lesions appear either in the immediate neighborhood of the primary one or some distance from it, sometimes in great numbers; the lymphatic glands are invaded, visceral metastases occur and death soon follows.

Formerly all the malignant pigmented growths of the skin having their origin in pigmented nævi were classified as sarcoma, but the studies of Unna, Gilchrist and others, as has been observed elsewhere, have shown quite conclusively that most, if not all, of them are epithelial growths and therefore carcinoma, not sarcoma. My own limited studies of such cases have convinced me of the correctness of this view (*vid.* Nævocarcinoma).

As melanotic whitlow Hutchinson described a form of melanotic sarcoma which begins as a chronic inflammation of the nail; this gradually develops into a fungating slightly pigmented tumor followed in time by secondary growths.

Idiopathic Multiple Hemorrhagic Sarcoma (Kaposi).—Kaposi first called attention to this affection in 1872, giving it the name idiopathic multiple pigmented sarcoma which a little later he changed for the name

by which it is now known. It begins almost invariably upon the extremities (Fig. 217) as more or less deeply pigmented and infiltrated patches of variable size and shape followed in time by nodules and small tumors which when numerous and closely aggregated form thick plaques of considerable size with uneven surface. Upon the backs of the hands and tops of the feet it usually occurs as a uniform slate-colored or violaceous rather firm infiltration without any indication of tumor formation. Some of the tumors are very vascular, resembling angiomata; and firm pressure upon them produces a noticeable diminution in their size.

The mucous membranes are sometimes implicated along with the skin and at a comparatively early period, pigmented patches appearing on the inside of the lips, cheeks and on the hard and soft palate.

Subjective symptoms are usually slight, although quite severe pain sometimes attends the appearance of the lesions which usually subsides when they are fully developed. In a case of my own severe itching accompanied the first appearance of the disease upon the feet and continued for some time after the disease was well established, but at no time did the patient complain of pain.

The extent of the disease varies considerably. In some cases there are a few pigmented patches of moderate size situated usually upon the legs, while in others and in advanced stages not only the extremities, but the face, ears and trunk are affected.

Its course is usually slow, lasting from three or four to twenty years or even more. In the case above referred to (see Fig. 217)) it lasted for twenty years without appreciably affecting the patient's general health. New pigmented patches and nodules continue to appear while the old ones slowly increase in size. As in other forms of sarcoma, spontaneous involution of a nodule or tumor sometimes occurs; the pigment begins to fade, the nodule becomes less prominent, the skin over it becomes somewhat scaly, and eventually a depressed scar-like patch is all that remains. In the late stages ulceration may occur, but this is decidedly uncommon. In the final stage metastases involving the viscera occur, and the bones may be attacked. Bernhardt and Hille have reported cases in which some of the tarsal and metatarsal bones were more or less completely destroyed. When visceral metastases take place death soon follows.

Etiology.—The cause of sarcoma is unknown. It may occur at any age, and both sexes are equally liable to it. In the melanotic variety originating in a pigmented nævus injury or repeated irritation frequently serves to start it. In hemorrhagic sarcoma of the Kaposi type prolonged exposure to severe cold has preceded the appearance of the malady in a certain proportion of cases (Semenow, Jackson).

Pathology.—Sarcoma is a connective-tissue neoplasm composed of small or large, round or fusiform cells surrounded by a delicate

reticulum. In the non-pigmented forms the cells are as a rule of the small fusiform type, much less commonly they are of the small round variety. In fibrosarcoma there is a considerable amount of fibrous

FIG. 217.—Idiopathic multiple hemorrhagic sarcoma.

tissue and the cells are usually fusiform.

In melanotic sarcoma the cells may be large and round or small

and fusiform. In those which begin in pigmented nævi they are large, round and contained in alveoli, reproducing to some extent the structure of the nævus in which they have had their origin. In the secondary form following sarcoma of normally pigmented tissues like the choroid, the cells are of the fusiform variety. The pigment present in these growths, known as melanin, occurs as yellowish-brown granules in and between the cells; it is quite distinct from the blood pigment found in the ordinary pigmented variety.

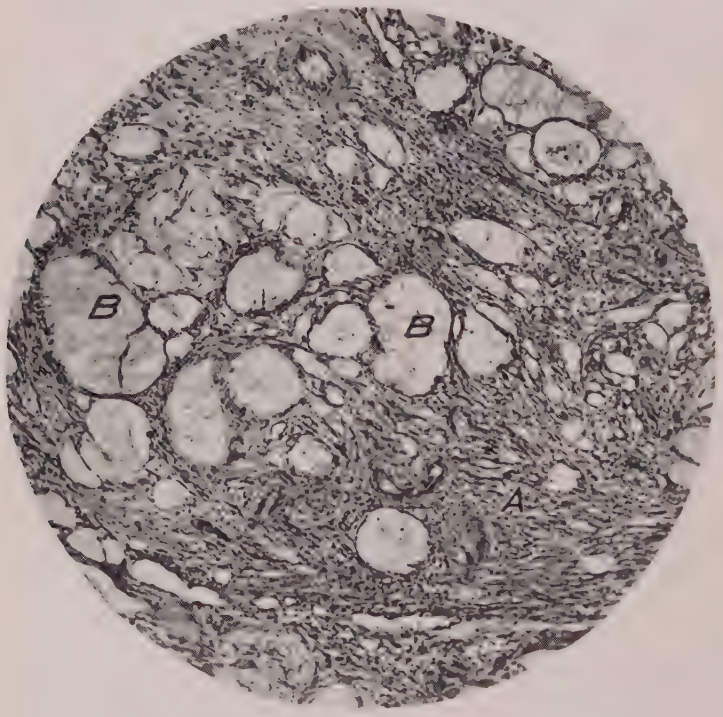


FIG. 218.—Multiple pigmented hemorrhagic sarcoma. *A*, spindle-cells; *B*, lacunæ filled with blood. Low power.

As already observed the growths which originate in pigmented nævi are almost certainly not true sarcoma, but carcinoma.

There is some difference of opinion about the exact place which should be assigned to the Kaposi type. While most agree that it is sarcomatous, a considerable minority believe this doubtful, and some deny it altogether. De Amicis, whose experience with the disease has been large, perhaps larger than any other author, would place it between granuloma and real sarcoma. Bernhardt believes it sarcoma which has its origin in the perithelium of the blood-vessels. The study of my own case leads me to regard it as a sarcoma of special type in which disease of the blood-vessels have a prominent share.

In the case previously referred to the pathological changes were

limited to the corium, the epidermis showing but little alteration beyond a moderate increase in the thickness of the horny layer. The papillary layer had disappeared entirely and the reticular portion of the corium throughout its whole extent was occupied by a cavernous tissue resembling under a low power an angioma (Fig. 218). It contained numerous cavities with thin walls lined by endothelial cells filled with blood. Between these were islets of round and spindle-cells contained in a rather coarse fibrous mesh-work within and between which was a considerable quantity of brown granular pigment. In most instances the spindle-celled areas surrounded capillaries, the long axis of the cells parallel with the long axis of the vessel. Numerous interstitial hemorrhages were present in various parts of the tumor. These changes corresponded in all essential particulars with those described by other observers.

Diagnosis.—Non-pigmented sarcoma is to be distinguished from fibroma, granuloma fungoides and from leukæmia cutis. The nodules of the first-named are considerably harder than those of sarcoma, are usually of very slow growth, and show no tendency to dissemination. From the two latter the differentiation is not always easy, particularly in the early stages, even with the aid of a biopsy, but the evolution and course pursued by sarcoma is as a rule much more rapid. Melanotic and multiple hemorrhagic sarcoma present such characteristic pictures in most instances that errors in diagnosis seldom occur.

Prognosis.—The prognosis in every variety of the malady is unfavorable, death being the usual termination, although the period at which this occurs varies much. Fibrosarcoma is the least, the melanotic the most, malignant form, death occurring in the latter in the course of a year or eighteen months, and even earlier. The multiple hemorrhagic variety usually runs a prolonged course of five to ten years or longer, but exceptionally death occurs in the course of a few months. In rare instances, after a considerable duration, spontaneous recovery takes place, as in the cases reported by Hardaway.

Treatment.—As may be gathered from the foregoing the treatment leaves much to be desired. Surgical removal is usually followed by prompt recurrence, and in the melanotic variety seems to incite the malady to increased activity. Fibrosarcoma is somewhat of an exception, since its thorough removal not uncommonly results in a cure.

Arsenic given internally seems at times to exert a favorable influence upon the tumors, but as has already been noted these sometimes undergo spontaneous involution; and it is always difficult to determine just how much of the favorable course of the malady in those taking arsenic is to be attributed to the drug. In recent years a considerable number of cases of sarcoma have been reported in which the neoplasm has disappeared after X-ray treatment. In a case of the multiple hemorrhagic type I observed considerable improvement in all the symptoms for a time; and others have reported encouraging results from the use of this agent. It should always be given a thorough trial.

LEUKÆMIA CUTIS. PSEUDOLEUKÆMIA CUTIS

Leukæmia and pseudoleukæmia are at times accompanied by cutaneous eruptions of diverse kinds, by tumor-like infiltrations of the skin and by actual tumors situated in the skin and subcutaneous tissues. According to Pinkus the cutaneous lesions of leukæmia may be divided into three groups: first, leukæmic tumors; second, a more or less generalized dermatitis followed in time by tumors, of which the lymphodermia perniciosa of Kaposi is the type; third, exudative erup-

Fig. 219.—Leukæmia cutis. Numerous pruritic nodules; patient presented blood-picture characteristic of lymphatic leukæmia.

tions, mostly of an urticarial type, produced only indirectly by the leukæmia, in which leukæmic tissue is not present and in which tumor formation is rare. For this last group Audry has proposed the name "*leucémides.*"

In acute lymphatic leukæmia hemorrhages into the skin, varying from petechiæ to extensive extravasations, accompanied by hemorrhages from the mucous membranes of the mouth, nose, bladder, vagina and the gastro-intestinal canal, frequently occur. When these hemorrhages are large they may result in destructive necrosis of the skin and mucous membranes. In chronic lymphatic leukæmia pruritus of varying degrees of severity, and eruptive lesions most commonly

of urticarial type, but occasionally erythematous, vesicular, or nodular, may occur (Fig. 219). An extensive dermatitis characterized by dry, red and scaling, or moist and oozing patches resembling eczema, accompanied or followed by flat ill-defined, red or brownish-red infiltrated areas and tumors which tend to undergo ulceration—is at times present. This last frequently bears a close resemblance to granuloma fungoides and is probably identical with the affection described by Kaposi under the title lymphodermia perniciosa. Actual tumor formation, the tumors

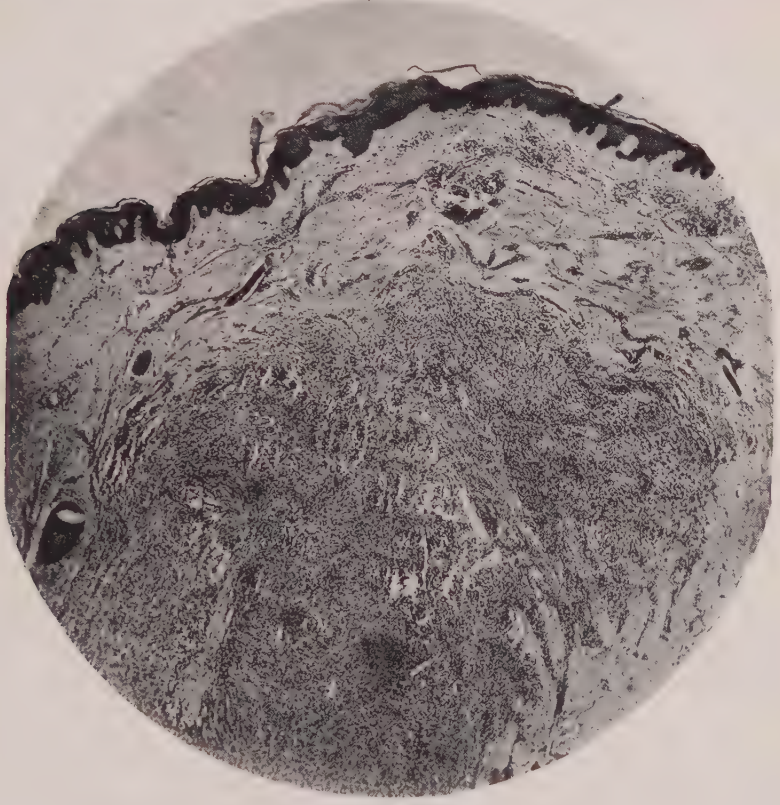


Fig. 220.—Leukæmia cutis. Dense infiltrate of lymphoid cells in the corium. Section of nodule from case shown in Fig. 219.

situated most frequently in the face, less commonly on the trunk and extremities, may occur. These are red or violaceous in color, of varying dimensions, and after reaching a certain size usually show but little change for an indefinite period; as an exceptional occurrence ulceration takes place.

In myelogenous leukæmia the skin is pale and dry, but eruptions are much less frequent than in the lymphatic variety although nodular lesions and, in rare cases, tumors may occur.

In pseudoleukæmia (Hodgkin's disease) cutaneous symptoms much like those already described as occurring in lymphatic leukæmia are

occasionally present. Pinkus regards the former as identical, both clinically and histologically with the latter.

Etiology.—The eruptions and tumors are dependent upon the general blood disorder whose cause is unknown. The recent discovery of a diphtheroid bacillus in the blood of individuals suffering from pseudoleukæmia makes it probable that this affection is an infection, but the etiological relationship of this organism to the malady is not yet definitely established.

Pathology.—According to Pinkus leukæmic tumors, which are situated in the corium and hypoderm, are lymphatic granulation tissue composed of lymphocytes, which arise from the abnormal growth of traces of lymphatic tissue normally present in the skin. These accumulations of lymphocytes are present not only in the infiltrations and tumors, but also in those eruptions which present no symptoms of infiltration (Fig. 220). They are absent, however, as a rule, in the eruptions of the third group.

Diagnosis.—Since the leukæmic eruptions as a rule present nothing characteristic of the general condition with which they are associated their true nature is very apt to be overlooked or misapprehended. The chronic multiform dermatitis with infiltrations and flat tumors, as already observed, bears a very close resemblance to granuloma fungoides, and can only be differentiated from that affection by a study of the blood, which should never be omitted in such cases.

Treatment.—The treatment of the cutaneous lesions of leukæmia is, of course, essentially the same as that of the underlying blood disorder. Quite recently favorable results from the internal administration of benzole (benzene) have been reported by a number of observers, but this remedy is still on trial. The careful and intelligent use of the X-ray is probably the most useful therapeutic measure, especially in the treatment of the tumors and tumor-like infiltrations.

CHAPTER XVI

NEUROSES

ANÆSTHESIA

Definition.—Loss of sensation.

Anæsthesia in varying degree accompanies a number of diseases of the skin and those which may affect the skin along with other tissues or systems, such as syphilis and leprosy. It may in rare instances occur as an idiopathic affection, but is usually symptomatic, and is in most instances a symptom of disease of the central or peripheral nervous system. It may be, in exceptional cases, quite general, but is much more frequently limited to certain districts or to the area of distribution of definite nerve branches. It varies all the way from slight numbness to complete loss of sensibility. Occasionally there is dissociation of sensibility, as in Morvan's disease, or syringomyelia, in which with retention of tactile sensibility there is complete loss of temperature sense and sensibility to pain; or there may be complete tactile anæsthesia with severe pain (anæsthesia dolorosa, Romberg). The loss of sensation may be accompanied by structural changes in the skin or there may be no demonstrable alteration in its structure. It is a common manifestation of hysteria in which it is often complete; it may occupy the half of the body, hemianæsthesia, or all of it, or it may occur in irregular areas without any definite relation to nerve distribution; it is apt to shift its location and to vary much in degree from time to time.

The prognosis depends altogether upon the nature of the affection of which it is a symptom. The treatment belongs to the neurologist rather than the dermatologist.

HYPERÆSTHESIA

Definition.—Abnormal sensibility of the skin.

Abnormal sensibility of the skin may occur independently of any other manifestation of disease, but is in the great majority of cases symptomatic, usually of some affection of the nervous system, central or peripheral. It presents all degrees of severity from mere discomfort to acute pain which may be produced by the slightest touch or by contact with the clothing in severe cases. It may occupy small or large areas of the skin, and in exceptional cases may be more or less general. The increased sensitiveness may be confined to the touch, or it may affect the temperature sense as well or exclusively. It is a common symptom of hysteria in which, like all other symptoms of that protean affection, it may exhibit all kinds of variations as to degree, distribution, situation and duration. It may be a temporary symptom or it may last indefinitely.

The prognosis and treatment are essentially the same as those of the diseases with which it is associated.

PRURITUS

Synonym.—Itching.

Definition.—An affection characterized by itching without visible or palpable signs of disease in the skin.

Symptoms.—Itching is a very frequent concomitant of many diseases of the skin, chiefly those of an inflammatory character, such as eczema, lichen planus, urticaria, and is one of the principal symptoms of such parasitic diseases as scabies and pediculosis; but it may occur quite independently of such, without other symptoms, constituting a disease in itself. Pruritus as a primary or independent affection may affect the entire cutaneous surface more or less, Pruritus universalis, or it may be confined to certain regions, Pruritus localis; the latter is much the more frequent variety and shows a decided preference for certain localities.

Pruritus Universalis.—The affection usually comes on quite insidiously with sensations of itching, stinging, creeping, formication, which may be more or less continuous, but are much more apt to occur in paroxysms coming on at irregular intervals, and which are almost invariably greatly aggravated at night, beginning often with the removal of the clothing upon retiring. Not all portions of the skin are affected at the same time, but the itching shifts about, now affecting the face, now some portion of the trunk, and again the extremities. It exhibits the widest variation in its intensity; in mild cases it is but a trifling annoyance, in severe ones it makes sleep and rest well-nigh impossible and drives the patient to the most violent scratching in his efforts to obtain relief which is only obtained, and then for but a brief period, when the skin is torn and bleeding. In the latter case parts accessible to the patient's fingers are covered with linear excoriations, and sooner or later eczematous patches which ooze and crust, thickening and pigmentation appear as the result of the long-continued violent irritation. A more or less generalized pruritus is common in the elderly and aged, pruritus senilis. It is often of a severe type, causing the patient great distress, and may or may not be associated with more or less pronounced evidences of senile change in the skin.

Under the name *pruritus hiemalis* Duhring some years ago described a form of itching which, coming on in the autumn, continues until the return of warm weather. Although usually most pronounced on the legs, it is not confined to these regions, but occurs upon the trunk and upper extremities as well. It is commonly quite severe and is frequently followed by eczematous changes, especially upon the legs, the result of scratching. "Prairie itch," "swamp itch," "lumberman's itch," are in all probability examples of the same affection.

As bath pruritus Stelwagon has called attention to a form which follows bathing. The itching usually comes on immediately after leaving the bath, and may be slight or severe. While it may be limited

to the lower extremities it frequently affects the trunk or the entire body, and may last from a few minutes to two or three hours. In a case under the author's care the itching was well-nigh intolerable and lasted for three or four hours so that bathing was a severe ordeal.

Pruritus Localis.—As already observed, the local forms of pruritus are especially prone to affect certain regions, those most frequently affected being the anus and the genital region of both sexes; much less commonly the itching is confined to the legs, to the palms and soles, to the face, especially about the nose, and to the scalp.

Pruritus Ani.—This is one of the commonest forms of localized pruritus. The itching is often of the severest character, coming on in paroxysms which compel the patient to scratch regardless of place and surroundings. As a result of this violent scratching the anus and the parts immediately around are excoriated, the skin is thickened and forms radiating folds at the muco-cutaneous junction, which are often whitish from maceration. The itching frequently extends forward to the perineum where the same eczematous changes are soon produced. The scrotum is likewise often the seat of pruritus, pruritus scroti, but, owing to the delicacy of the skin in this region, inflammatory changes with thickening and oozing soon appear.

Pruritus Vulvæ.—One of the most distressing of all the local forms of pruritus occurs on the vulva. The itching affects not only the cutaneous surface, but the mucous membrane of the labia and the parts about the clitoris and occasionally extends well within the vagina. It usually comes on paroxysmally and is often atrocious, driving the patient during the paroxysms almost insane, and often making a complete nervous wreck of her.

Etiology and Pathology.—Generalized pruritus is in many cases, if not in most, due to toxic substances of unknown nature, either formed in and absorbed from the gastro-intestinal canal or produced in the economy by metabolic disturbances. It is frequently associated with hepatic disease, functional or organic, and is a frequent concomitant of jaundice; it is also at times associated with disease of the kidneys, of the uterus and ovaries, and with pregnancy. In the last-named it may be reflex, or what is more common, the result of the formation and retention of toxic substances which occur so frequently in this condition. In a certain proportion of cases it is due to the ingestion of certain articles of food, especially shell-fish, and to drugs, such as opium and its alkaloids and cocaine, the last-named at times producing all kinds of anomalous sensations of creeping and crawling accompanied by delusions of insects or foreign bodies in the skin. In a case of severe general pruritus under the author's care some years ago it was learned that the patient was in the habit of taking one or two small doses of opium daily for the control of a chronic diarrhœa; with the suspension of the opium the pruritus which had tormented the patient for many years completely disappeared. Tea, coffee, alcohol and tobacco are in many cases predisposing, if not direct, causes of both local and general itching. The author has knowledge of an instance

in which the smoking of a strong cigar after dinner in the evening was invariably followed by pruritus of the anus lasting throughout the night. In a small proportion of cases the itching is associated with disease of the central nervous system. Köbner has reported a case of severe unilateral itching with suppression of sweat on the paralyzed side after cerebral embolism; and Sarbó (quoted by Sack) observed incoercible pruritus in several cases of beginning progressive paralysis Senile pruritus is commonly attributed to senile changes in the skin, but in many cases the skin presents no visible abnormality. In pruritus ani and pruritus vulvæ some local disease may be the exciting cause; in the former hæmorrhoids, fissure ascarides, in the latter, leucorrhœa may be the exciting cause. Pruritus vulvæ may occur at the menopause as a reflex symptom. Only too often, however, no cause can be found in both the universal and local forms.

The affection is a functional disturbance of the nerves of the skin unattended by any discoverable alteration—a sensory neurosis. As has already been pointed out, in long-standing cases inflammatory changes appear sooner or later in the skin as the result of scratching.

Diagnosis.—Itching without any eruption of any sort is so characteristic of the affection that the diagnosis in uncomplicated cases is made without difficulty. General pruritus is most likely to be mistaken for pediculosis corporis, but the absence of the linear excoriations over the shoulders and buttocks so characteristic of the latter, and failure to find the parasite, which should always be looked for in cases of general itching, will serve to exclude the parasitic affection. Urticaria may at times be mistaken for pruritus owing to the absence of the characteristic wheals at the time of the examination, but there is usually a clear history of an eruption which comes and goes in the former. In pruritus ani and pruritus vulvæ, as in other forms of local pruritus, the absence of visible change in the skin is diagnostic, but when a secondary eczema has appeared it is often next to impossible to say whether the primary affection was an eczema or pruritus unless the history is very clear. Particular care should always be taken to exclude pediculosis pubis in itching about the genitalia before making a diagnosis of pruritus.

Prognosis and Treatment.—Pruritus in all its forms is often most rebellious to treatment and usually taxes our therapeutic resources to the limit. Senile pruritus and pruritus of the anus and of the vulva are the most intractable varieties. The last frequently drives its unfortunate victims to the verge of insanity, and sometimes over it. When the cause is discoverable and removable the outlook is, of course, much more favorable than when the contrary is the case.

Treatment should be both general and local. Careful search should always be made for evidence of gastro-intestinal, hepatic or renal disease, and if any of these are present, they should receive appropriate treatment. The urine should invariably be examined for sugar, and if this is present a proper dietary should be adopted. The diet in any case should be most carefully ordered, excluding such articles of food

as are known to excite at times disturbance in the skin, such as salt- and shell-fish, fresh pork, strong cheeses; complete abstinence from tea, coffee, alcohol and tobacco should be insisted upon. In pruritus ani and vulvæ all possible local causes should be carefully looked for, such as hæmorrhoids, ascarides, especially in children, anal fissure, and in women disease of the uterus and ovaries, and if found should be given careful attention.

While internal treatment only too often fails to produce curative effects a number of drugs are more or less serviceable in affording relief from the itching. Cannabis Indica, ¼ to ½ gr. (0.65 to 0.03) of the extract, three times a day, has often proven of decided value in the author's hands; antipyrin, acetphenetidin, aspirin, or some other form of salicylic acid, are also more or less useful at times in lessening the itching. Sodium bromide, in considerable doses, 20 to 30 grs. (1.30 to 2.0) several times a day, is also a useful remedy, and its usefulness may be considerably increased by combining it with cannabis indica. Carbolic acid given carefully in increasing doses, may be employed with good effect; it should be carefully watched to avoid toxic effects. In some cases pilocarpin has produced good results. Quite recently calcium chloride or lactate, in doses of 15 to 20 grains (1.0 to 1.30) three or four times a day, has been highly recommended as a remedy for itching, but the author, who has given it considerable trial, is rather sceptical about its usefulness. Hypnotics, such as chloral, sulphonal, trional and veronal, may be given, but they usually fail to produce relief unless given in large doses. In the author's opinion opium and its alkaloids are to be used only under very exceptional circumstances; as is well known, these frequently produce pruritus in certain individuals, and what is much more important, the danger of acquiring the opium habit is too great to justify their use in most instances. Indeed, habit-forming drugs of any kind should be prescribed in so distressing and chronic an affection as pruritus, only after due consideration of the dangers attending their use.

Local treatment is always necessary and is frequently much more effective than the internal treatment. Warm baths, either plain or made alkaline by the addition of bicarbonate or biborate of soda, ¼ lb. (80.0), to the bath, are often useful, especially in senile pruritus and their good effects are often considerably enhanced by following them with inunctions of some bland ointment such as cold-cream, or, better, cold-cream and lanoline. In bath pruritus the skin should be quickly and thoroughly dried after the bath and liberally dusted with talcum powder, plain or containing one-half of one per cent. menthol. Woolen underwear should never be worn next the skin, but cotton or silk over which a woolen garment may be worn in cold weather; this is especially important in that form of pruritus which comes on in cold weather (pruritus hiemalis), a form which is most effectively treated by removal to a warmer climate during the winter season.

By far the most useful local remedies are carbolic acid and menthol; these may be used as lotions or ointments, the form adopted depending

largely upon the extent of surface, to which they are to be applied. The first may be used as a lotion in aqueous solution, varying in strength from 3 to 5 per cent., and it is usually more effective if a small quantity of glycerin is added to it (3 to 4 per cent.). This solution should be mopped or sprayed on the surface several times a day and may be followed by a dusting powder of talc and subcarbonate of bismuth. The antipruritic effect of carbolic acid is usually more pronounced when used as an ointment which may be of a strength varying from 2 to 4 per cent., but the ointment should not be applied to large surfaces without caution since toxic effects may be produced by absorption. Bronson advises the following oil containing a large percentage of carbolic acid:

℞
Acid. carbolic .....ʒi–ʒii (4–8)
Liq. potassæ .....fʒi (4)
Ol. lini .....fʒi (32)
M.

This mixture should be thoroughly shaken before applying it and should not be applied over very large areas for fear of toxic effects.

Although menthol is only very slightly soluble in water the following lotion will often afford great relief from itching, and has the very great merit that it never irritates as many other antipruritic remedies do.

℞
Mentholis .....gr. viii (0.5)
Sodii biborat. .....ʒss (2.0)
Glyceri .....fʒii (4.0)
Aq. destil .....fʒviii (250.0)
M. Filtra.
Sig. Apply with an atomizer.

The following ointment is highly recommended by Sack:

℞
Ung. zinci oxid. .....gr. ccc (20.0)
Adipis lanæ .....ʒijss (10.0)
Mentholis .....gr. xv (10.0)
Aq. acid. carbolic .....(6%) fʒi (30.0)
M.

Lotions of chloral, 2 to 4 per cent., of thymol, 5 per cent., of resorcin, 2 to 4 per cent. are likewise more or less useful, especially if they are made up with some alkaline menstruum, such as lime-water.

Coal tar, as the liq. carbonis detergens, is frequently of great service in relieving itching, especially if combined with carbolic acid or menthol. The following is a useful formula:

℞
Liq. carbonis detergentis .....fʒii (60)
Mentholis .....gr. iv (0.25)
M. et adde
Glycerin .....fʒij (8.0)
Liq. calcis .....q.s. ad fʒiv (120.0)

In pruritus ani and pruritus vulvæ the same local remedies are to be employed. A paste containing from 2 to 4 per cent. of carbol-

camphor is one of the most valuable local remedies in these most distressing affections. In pruritus vulvæ douching the parts with water as hot as can be borne will occasionally bring relief lasting for some hours. Painting the parts with a solution of silver nitrate in spt. ætheris nitrosi, 2 to 5 per cent., will occasionally succeed after other remedies have failed, but it, too, often fails. Marked, and occasionally, permanent relief is at times obtained from the X-ray. Lastly, when all other measures have failed to bring relief, divisions or exsection of the nerves supplying the parts may be resorted to.

DERMATALGIA

Synonyms.—Neuralgia of the skin; Rheumatism of the skin; Fr., Dermalgie.

Symptoms.—The affection is characterized by pain, unassociated with any visible change in the skin, which is in most cases confined to limited areas of varying extent. The severity of the pain varies from moderate discomfort to excruciating torture, and is described by the patient as stabbing, burning, or tearing in character. It usually comes on spontaneously, but contact with some foreign body or movement may precipitate an attack. The pain may be continuous but is more frequently paroxysmal and is in most cases decidedly worse at night. More or less hyperæsthesia frequently accompanies the neuralgia.

The term *causalgia* was employed by Weir Mitchell to designate the peculiar burning pain which accompanies certain affections associated with disease of the peripheral nerves, such as glossy skin. The author has seen in two instances severe and persistent burning pain in the skin occur as a sequel of zoster which appeared after all visible evidences of disease had entirely disappeared, and persisted for months. The sensation was likened by the patients to that produced by holding a hot iron close to the skin.

Etiology.—The causes of neuralgia of the skin are frequently obscure. It is more frequent upon the hairy skin than upon smooth parts and usually occurs in middle-aged subjects who are more often women than men. It occasionally follows exposure to cold and is at times associated with rheumatism, chlorosis and hysteria. In a considerable proportion of cases it is a concomitant of disease of the cord, such as locomotor ataxia, or of some affection of the peripheral nerves.

Diagnosis.—It is to be distinguished from hyperæsthesia by the existence and continuance of pain independent of contact with some foreign body; but as in a certain proportion of cases of neuralgia there is also more or less pronounced hyperæsthesia an accurate differentiation of the two is not always possible. It is also to be differentiated from muscular rheumatism.

Prognosis and Treatment.—In most instances the affection pursues an irregular and chronic course with periods of remission and exacerbation. In a certain proportion of cases, however, after some weeks or a month or two it disappears spontaneously.

The general treatment is to be directed to the condition with which it is associated. In rheumatic subjects the salicylates should be given, especially aspirin, which often acts most effectively in relieving pain. When the patient is chlorotic, iron, arsenic and cod-liver oil are indicated. When disease of the cord or peripheral nerves is the underlying affection these are to be treated in an appropriate manner.

Relief is often afforded by local remedies. The prolonged application of hot water or frictions with liniments containing aconite or chloroform are frequently of service, although the relief thus obtained is apt to be only temporary. Lightly blistering the painful areas will at times produce a favorable effect which is occasionally permanent.

ERYTHROMELALGIA

Definition.—A disease characterized by pain and flushing of the extremities.

Symptoms.—This rare affection was first described by Weir Mitchell, in 1872, as a " rare vaso-motor neurosis " of the extremities, and in a subsequent communication, in 1878, he proposed for it the name erythromelalgia, the name by which it has since been known.

It is characterized by pain of a burning character in one or both feet, usually some part of the sole, such as the ball of the great toe or the heel, which comes on after walking or prolonged standing. After a time the pain is followed or accompanied by flushing of the affected part which becomes a bright or dusky, mottled red when the patient assumes the erect position; the superficial vessels stand out prominently, the pain becomes of a throbbing character and the temperature of the foot is elevated one or two degrees. When the horizontal position is resumed the pain and vascular symptoms disappear. The attacks usually, at first come on in the evening, but as the disease continues they appear during other parts of the day. The affection usually comes on gradually, but it may appear quite suddenly, as in a case reported by Gerhardt in which it began in the night with headache and vomiting. It is as a rule slowly progressive up to a certain point and then becomes stationary. The pain may be mild or severe, may be limited to the foot, or exceptionally, may extend to the leg. In a few instances the hands as well as the feet have been affected (Gerhardt, Senator). Trophic changes occasionally are observed; Mitchell saw ulceration of the toe occur and Morel-Lavallée has reported trophic changes in the nails, but this case was quite atypical and a doubtful one.

Etiology and Pathology.—The disease occurs far more frequently in men than in women, and its subjects are usually young adults. It is usually, but not always, worse in summer, and improves with the appearance of cold weather. In a certain proportion of cases it occurs independently of any other discoverable affection, in others it is associated with symptoms of disease of the cord or of the peripheral nerves. In a number of cases symptoms of Raynaud's disease have also been

present; indeed, it is occasionally difficult to draw a hard and fast line between the two affections. It has been observed to follow traumatism; in a case recently under the author's observation it followed an injury to the foot.

Mitchell and Spiller in the histological examination of a toe which had been amputated for ulceration following erythromelalgia found marked degeneration of the nerves; the connective tissue surrounding the nerve bundles was greatly thickened and many of the nerve fibres had disappeared. There was likewise great thickening of the walls of the arteries and veins, the lumen of the former being occasionally occluded.

Diagnosis.—It may be confounded with gout and rheumatism, but these affections are unaccompanied by the peculiar vascular phenomena which characterize erythromelalgia. At times it may be difficult to differentiate it from Raynaud's disease since, as already noted, symptoms of both may be present.

Prognosis and Treatment.—The prognosis as to recovery is unfavorable, but in many instances the affection comes to a standstill.

The treatment is largely symptomatic, since we know of no remedy which is curative. Antipyrin, phenacetin and aspirin are frequently of decided service in relieving the pain. In a case under the author's care the first-named kept the patient free from pain as long as he continued to take it; Senator also found it of service. Recently Kanoky and Sutton found short exposures to the X-ray, using a soft tube, useful.

MERALGIA PARÆSTHETICA

Definition.—An affection characterized by abnormal sensations in the region of distribution of the external cutaneous nerve.

This rare condition which was first described by Bernhardt, in 1895, and shortly afterwards given the name *meralgia paræsthetica* by Roth, is distinguished by sensations of tingling, pricking, tearing, cold or heat, less frequently, itching and pain, situated on the outer surface of the thigh in the region supplied by the branches of the external cutaneous nerve. There is usually some diminution of tactile sensibility in the same region. These abnormal sensations usually come on while walking or standing and vary much in degree from mere annoyance to severe discomfort.

The affection is much more frequent in men than in women; of 100 cases collected by Musser and Sailer, 75 were men. It has been noted to follow lead-poisoning (Bernhardt), exposure to cold, infectious fevers, such as typhoid, and in a considerable proportion of cases, traumatism. All of Oppenheim's cases (quoted by White) occurred in alcoholics. In women it may follow pregnancy.

Treatment is usually without much effect. In some cases massage has been found useful. Excision of the nerve where it passes under Poupart's ligament has given good results (Osler). Goldberger obtained prompt relief in his own person by wearing a metal plate in his shoe for the correction of flat foot.

CHAPTER XVII

DISEASES OF THE APPENDAGES—MORBI APPENDICIUM

DISEASES OF THE NAILS

Diseases of the nails may be congenital or acquired; they may occur independently of other morbid conditions, but are far more frequently secondary to diseases of the skin, for the most part of an inflammatory character. Alterations of the nail itself are, with but very few exceptions, secondary to or a part of pathological changes in the nail-bed or matrix or in the surrounding nail-wall. Such changes may result from injury, may be due to acute local disease, may follow acute or chronic general diseases, or may be a part of such general infections as tuberculosis, syphilis, leprosy. Diseases of the nails occasionally accompany chronic affections of the circulatory system, or follow disease or injury of the central or peripheral nervous systems as a consequence of disturbance of trophic functions. Owing to the very varied character of their etiology, and more particularly because the same condition may arise from diverse causes, the etiological diagnosis is frequently a matter of considerable difficulty.

ONYCHAUXIS

Definition.—Overgrowth of the nail.

Symptoms.—While the nail may be increased in all three directions, the increase is usually most marked in the direction of its length and thickness. The nail-plate is hard, ridged, or quite smooth and shining, and of a yellowish or brownish color. Quite often it is separated from the nail-bed by a considerable accumulation of ill-smelling dry or moist horny epithelial scales, which may be readily scraped out. When the increase in length is considerable, and it may in exceptional cases amount to as much as 6–7 cm., the nail is usually twisted on its long axis or curved like a sheep's horn (onychogryphosis) (Fig. 221). While the nails of both fingers and toes may exhibit this deformity, it is most frequent upon the latter and usually most marked upon the great toe, to which it may be confined. When the increase in breadth is marked, one or both lateral nail-folds are frequently inflamed and ulcerated owing to the pressure of the edge of the nail-plate (ingrowing nail).

The number of nails is in rare cases increased, but only as a rule to which the exceptions are extremely rare, in connection with supernumerary fingers and toes. The nails are usually well-developed, but in exceptional cases may be more or less deformed. Occasionally nails of abnormal size are observed in syndactylism, a single nail covering two or more fingers.

Etiology.—Onychauxis may be congenital or acquired, the latter being much the more frequent. Wilson has reported a remarkable instance of the congenital variety, corresponding to the hyperkeratosis subungualis of H. Hebra, occurring in three generations. The nails of all the fingers and toes were thickened and lifted up from the nail-bed by a friable horny mass beneath them; the condition was present from birth. While the acquired form may occur at almost any age, it is much more frequently seen in the old and feeble, in whom it is often the result of neglect rather than of disease. It occasionally follows injury, some local inflammatory affection of the matrix, or some inflammatory disease of the skin, such as eczema or psoriasis. In chronic disease of the circulatory apparatus in which clubbing of the fingers takes place, there may be a coincident enlargement of the nails; and thickening and deformity may follow disease or injury of the peripheral nerves.

Treatment.—The redundant portion of the nail may be removed

FIG. 221.—Onychogryphosis.

by the knife or stout scissors when not too thick and hard, first soaking the nail thoroughly in a warm solution of bicarbonate of soda or borax. If the nail is very thick it may be necessary to use a small saw or bone-cutting forceps. To prevent recurrence, the nail should be frequently trimmed, and shoes which fit properly and do not press upon the toe unduly should be worn. When the overgrowth is secondary to some inflammatory affection of the nail-bed or to some disease of the skin these should have appropriate treatment. Ointments of tar, of salicylic acid, or of ammoniated mercury will often be found useful in such cases.

ATROPHIA UNGUIUM

Synonyms.—Onychatrophia; Atrophy of the nails.

Symptoms.—In rare cases the nails may be partially or wholly absent at birth (anonychia), or exist only in a rudimentary condition. Eichhorst has reported a case in which the nails of the fingers and toes were totally lacking at birth; Jacob one in which the nails

were only rudimentary, two of the patient's sisters exhibiting the same deformity; and Hutchinson observed a brother and sister in whom there was congenital absence of all the nails along with alopecia; the nails, however, grew later.

In the acquired forms of nail atrophy the nail-plate presents varying degrees of thinning or disorganization; it may be dry and friable, as when it is invaded by fungi, or in extreme cases it may be reduced to a soft parchment-like layer of cornified epithelial cells which barely cover the nail-bed (hapalonychia). Occasionally the thinned nails are concave instead of convex, the so-called "spoon-nails" (koilonychia). As onychorrhexis Dubreuilh and Frèche have described an atrophic condition of the nails characterized by fine longitudinal furrowing of the nail-plate and extreme brittleness.

At times the nail-plate becomes partly detached from the nail-bed without obvious cause (Onycholysis, *dècollement des ongles*). It becomes yellowish or brownish either at the anterior free border or at one of the lateral margins, and gradually becomes separated from the nail-bed, at times as far as the matrix.

At other times it is completely detached and cast off (shedding of the nails, onychomadesis). Montgomery has reported a case in which one or more of the nails was constantly being shed; the affection was hereditary, the mother of the patient and several of the maternal aunts and uncles suffering in like manner.

Transverse furrowing of the nails is seen with considerable frequency after acute illness and sometimes after quite trivial disturbances. The author has noted such furrowing in his own nails after two or three days of sea-sickness. The furrow is most marked in the thumb-nail and in the nails of the index and middle fingers, and much less so in the nail of the little finger.

Chalk-white patches frequently occur in the nails (leukonychia, leukopathia unguium, canities unguium, flores unguium). They may appear as small spots, leukonychia punctata; as transverse bands, leukonychia striata; and in rare instances the entire nail becomes white, leukonychia totalis. One or several nails may be affected at the same time or in succession, and in rare instances all the nails of both fingers and toes.

Etiology.—As may be gathered from the foregoing, the causes of atrophy of the nails are many and various. As already noted, it is in rare cases congenital, but far more frequently it is a sequel or accompaniment of some inflammatory affection of the nail-bed or matrix, or some disease of the skin; it may follow eczema, psoriasis, pityriasis rubra pilaris, epidermolysis bullosa, syphilis. In a case reported by the author some years ago extreme atrophy of the nails was associated with an arthritis of the fingers resembling arthritis deformans. The nails are occasionally shed after severe scarlatina with abundant desquamation; they are sometimes lost in certain diseases of the central nervous system, as locomotor ataxia.

Leukonychia may result from traumatism, as was observed by Heller in his own person, but in the majority of cases the cause is not known. In the case of total leukonychia reported by Giovanni, it followed typhoid fever, and in another, involving all the nails, reported by Weber and Krieg more recently, the patient suffered from a rheumatic cardiac affection. The white color is regarded by most authorities as due to accumulations of air bubbles between the cells of the nail-plate, but Heidingsfeld was unable to demonstrate this in sections of nails which he studied. Unna does not regard the presence of air as the primary condition, but secondary to abnormal softness and swelling of the nail-cells.

Treatment.—The treatment of the various forms of atrophy of the nails depends altogether upon the causation. When secondary to some disease of the skin, such as eczema or psoriasis, these must be appropriately treated. If the result of syphilis, mercury, salvarsan, and the iodide of potassium together with the use of mercurial ointments locally may be confidently relied upon to favorably influence the disease. In those cases in which there is no demonstrable local or general disease to which the affection of the nails can be traced, the internal administration of arsenic will at times produce favorable results, although it more often fails.

ONYCHIA

Synonym.—Onychitis.

Definition.—Inflammation of the nail-bed and nail-walls.

Symptoms.—To be strictly accurate, there is no such thing as inflammation of the nails, what is so called being inflammation of the soft parts to which the nail-plate is attached, the nail-bed and the nail-walls.

Onychia may be acute or chronic, the course it pursues being largely dependent upon the cause. In the former the distal phalanx becomes red, swollen, and painful, and suppuration of the nail-bed frequently occurs, often with inflammation of the nail-walls, followed by loosening of the nail, which may be completely detached, leaving a red granulating surface covered with pus. In the chronic form the inflammatory symptoms are usually less marked and the nail is thick and uneven.

In tuberculous and syphilitic children, much less frequently in adults, a rare form of onychia occurs, characterized by extreme chronicity (onychia maligna). It begins with inflammation of the nail-bed, which terminates in painful ulceration, continuing for many months or even years. Exceptionally the inflammation is unusually marked and may be accompanied by lamphangitis.

Along with the soft parts to which the nail is attached, the nail-wall, and the nail-bed, the deeper tissues surrounding the nail may also be inflamed, the inflammation at times extending down to the periosteum and terminating in suppuration (paronychia, panaritium, whitlow).

One of the most frequent forms of inflammation of the nail is that commonly known as ingrowing nail (Unguis incarnatus, Onychia lateralis). Owing to continued pressure upon the nail-wall by the edge of the nail, the former becomes painful, red, and swollen, and sooner or later ulceration occurs in the nail furrow. The ulcer is frequently covered with flabby granulations and shows no tendency to heal. Occasionally the ulceration extends beneath the nail, and in rare cases necrosis of the phalanx occurs. The affection is confined to the toes, in the great majority of cases to the inner border of the great toe.

Alterations occasionally occur in the nail as the result of syphilis. In infrequent cases one or more of the nails gradually lose their translucency and lustre, become yellowish, brittle, uneven, and fissured (Fig. 222), and in time are partially or completely detached from the nail-bed (onychia sicca syphilitica, scabrities unguium syphilitica, onyxis craquelé). The affection is usually a symptom of the later

FIG. 222.—Syphilis of the nails.

stages, but is seen exceptionally in the earlier period of the infection.

More frequently the nail-walls become red and swollen and ulceration follows, which at times extends beneath the nail-plate, which may be lost, leaving frequently a sluggish, very painful ulcer occupying the nail-bed (paronychia syphilitica). In most cases several nails, either of the fingers or of the toes, and not infrequently the majority of both, are affected. Heller attaches considerable importance to the multiplicity of the lesions as a diagnostic symptom. Syphilitic paronychia usually occurs in the secondary period and is apt to run a prolonged course.

As isolated papule of the nail-bed Heller describes a syphilitic affection of the nail occurring in the secondary stage, characterized by the appearance coincidently with the eruption of an intensely red spot beneath the nail, over which the nail-plate becomes increasingly thinner and finally gives way without suppuration.

Etiology.—A number of the causes of inflammation of the nails and the soft parts immediately connected with them have already

been alluded to in the account of symptoms. Injuries and infection secondary to them are frequent causes of onychia and paronychia. Infections such as syphilis and tuberculosis have already been referred to as occasional causes. Disease of the spinal cord may in rare instances be followed by paronychia; a painless recurrent paronychia is a characteristic symptom of Morvan's disease or syringomyelia.

Treatment.—In acute onychia following traumatism or local infection, moist dressings of a saturated solution of boric acid or of bichloride of mercury, 1:2000, should be applied continuously until the acute symptoms have subsided, when an ointment of ammoniated mercury or of calomel, 2 to 5 per cent., should be gently rubbed in twice a day. In the chronic forms and in those associated with eczema or other inflammatory disease of the skin, the same ointments may be used alone.

The treatment of paronychia is essentially surgical. When the inflammation is severe and extends deeply, a deep and free incision should be made into the inflamed parts and one of the above solutions applied.

In ingrowing nail the portion of the nail-plate pressing upon the inflamed nail-fold should be lifted up by gently insinuating a small pledget of absorbent cotton or gauze beneath it, at the same time trimming off as much of the nail as possible with the scissors. Should this fail to relieve the condition, the nail should be split and the part pressing upon the nail-wall removed. Properly fitting shoes must be worn to prevent a speedy return of the trouble, as it is in most cases due to the pressure of an ill-fitting shoe.

The treatment of syphilis of the nails does not differ from the treatment of syphilis of other parts

ONYCHOMYCOSIS

Definition.—Disease of the nails due to the vegetable parasites, the trichophyton, and the Achorion Schönleinii.

Symptoms.—Notwithstanding the frequency of ringworm of the scalp and of non-hairy parts, ringworm of the nails (onychomycosis trichophytica, trichophytosis unguium) is an uncommon disease. It begins at the free border of the nail, which becomes yellowish or dirty gray, opaque, and brittle. As it extends backward toward the lunula the nail-plate becomes thickened and fissured and is separated from the nail-bed by a dry friable mass of dirty gray color, consisting of elements of the fungus and cornified epithelial cells (Figs. 223 and 224). After a time the greater part or the whole of the nail-plate is disorganized and may be lost. Although as a rule, to which the exceptions are rare, the disease is unaccompanied by inflammatory symptoms, inflammation, and still less frequently suppuration, of the nail-walls and nail-bed may occur, probably as the consequence of a secondary staphylococcic infection. One or several nails may be affected, and in rare cases all of them. While confined in the great

majority of cases to the fingers, the nails of the toes do not always escape. Exceptionally the nails alone are affected, but in most cases ringworm of the scalp or of other regions is also present; Heller, however, observed an instance in which the nails of the fingers and toes were attacked alone. Unless arrested by treatment, the disease

FIG. 223.—Onychomycosis, ringworm of the nails.

pursues a very chronic course and may last for several years. Unlike other forms of ringworm, it is relatively frequent in adults, and even in old age. Heller collected records of four cases in men over sixty-nine years of age.

Favus of the nails (onychomycosis favosa), although a rare affection, is relatively less so than ringworm of the nails. It very rarely

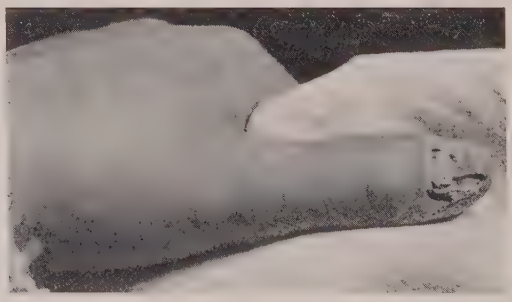


FIG. 224.—Ringworm of the nail, thumb.

occurs as an independent malady, but is almost always associated with favus of other regions, usually the scalp. It begins as one or more pale yellow spots beneath the free border of the nail-plate, which enlarge, extending backward toward the root until the greater part or the whole of the nail is affected. The nail-plate, which becomes opaque, thick, uneven, fissured, and brittle, is separated from the nail-bed by a yellowish friable, sometimes dry and powdery, mass

of mycelia and spores mixed with horny epithelial cells. The disease is confined in the great majority of cases to the nails of the fingers, although in rare instances the nails of the toes may be attacked. It may last for years and may eventually completely disorganize the nail.

Diagnosis.—The diagnosis of ringworm of the nails can only be made with certainty by the microscope, especially when it exists independently of ringworm of other regions, since its clinical features are by no means sufficiently characteristic to differentiate it from other dystrophic conditions of the nails. The fungus is usually, but not always, readily found in scrapings from beneath the nails (Fig. 225) which have been subjected to the action of liquor potassæ for a few

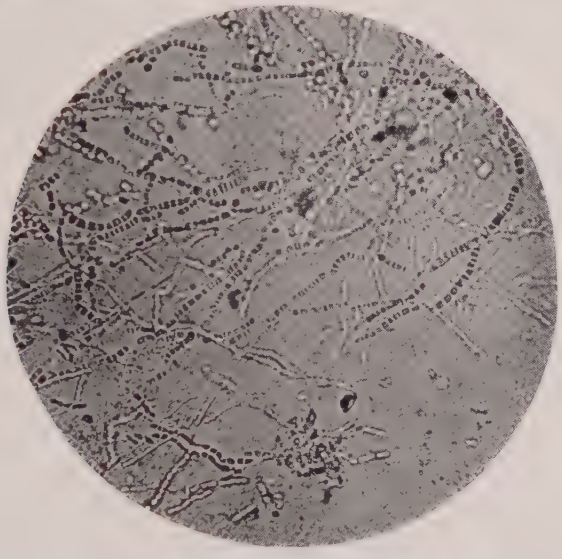


Fig 225.—Ringworm of the nails. Scrapings from beneath the nail, containing great abundance of jointed mycelium, from case shown in Fig. 223.

minutes. Favus of the nails is usually more readily recognized owing to the decidedly yellow color of the subungual accumulation and to its almost invariable association with favus of other regions, particularly the scalp. The *achorion* is easily demonstrated in the scales beneath the nail-plate.

Prognosis and Treatment.—Neither ringworm nor favus of the nails shows any tendency to spontaneous recovery; if left to themselves, they may continue for years, eventually destroying the nail. A cure is only to be obtained by persistent treatment.

In order to enable the parasiticides to reach the fungus, which is protected by the hard and almost impermeable nail-plate, as much as possible of the diseased nail should be trimmed off with the knife or scissors and the remainder scraped very thin with a dull knife-blade, or, better, with a piece of glass. The affected fingers or toes

should then be soaked in a hot solution of bichloride of mercury, 1 : 1000, for fifteen to twenty minutes daily, and afterwards dried and an ointment of ammoniated mercury, 5 to 10 per cent., applied. Sabouraud recommends the application of a dressing soaked in the following solution of iodine and potassium iodide: Iodine, gr. $^5/_6$ (0.05); Potassium iodide, gr. 15 (1.0); distilled water, 3 ounces (100.0). The dressing should be covered with a protective and should be continued for six months. As a last resort in obstinate cases, the diseased nails may be removed and tincture of iodine applied to the nail-bed.

DISEASES OF THE HAIR AND HAIR-FOLLICLES.

HYPERTRICHOSIS

Synonyms.—Hirsuties; Polytrichia; Trichauxis; Hypertrophia pilorum; Superfluous hair; Fr., Poils accidentels.

Definition.—Excessive development of hair.

Symptoms.—Abnormal development of hair may occur as a congenital anomaly or as an acquired condition; it may affect the entire hairy system or may be confined to certain regions, either those normally hairy or those in which lanugo is present under normal conditions. When it is general it is commonly designated universal hypertrichosis, but, strictly speaking, this is incorrect, since certain regions, such as the palms and soles, are invariably free from hair no matter how extensive the development may be.

Congenital hypertrichosis may be general or partial. In the former the abnormal growth of hair may be present at birth as a downy growth or less frequently pigmented, covering every part of the skin except the palms and soles; or, what is less common, the abnormal development may not take place until some months or a year or two after birth. Although a very rare anomaly, some remarkable examples of congenital universal hypertrichosis have been observed at various times. Among the best known and most striking are the Burmese family, of Shwe Maon, in which excessive and general hairiness was present in three generations; the Russian "dog-faced man," Jeftichjew, and his son, and the Burmese child, Krao, exhibited some years ago in various parts of Europe and America. In such cases the excessive development of hair is frequently associated with defective development of the teeth. According to Michelson, the grandfather of the hairy Burmese family was entirely without molars and had but one canine; Jeftichjew had no teeth in the upper jaw, and the son, who was examined when he was sixteen years old by Jackson, had but five teeth at that time.

More frequently the abnormal growth of hair is limited to certain regions in which hair does not normally grow. Many of the cases of partial congenital hairiness are examples of hairy nævus, the hair growing, not upon normal, but upon pigmented or otherwise altered skin. Occasionally the abnormal growth is situated in the lumbar region over a concealed spina bifida.

Acquired partial hypertrichosis may affect regions in which normally the hair is but little developed, or exists as lanugo, such as the upper lip, chin, and cheeks in women; or hair may develop prematurely in regions which are normally hairy only in adult age, such as the cheeks, chin, and upper lip in male children and the genitalia in children of both sexes. Beigel saw a girl, six years old, in whom the genitalia were developed and covered with hair like a woman of twenty; and boys are in rare instances seen with a beard, usually associated with precocious development of the sexual apparatus.

The hair of the beard and scalp in exceptional cases undergoes unusual development and may reach an extraordinary length. Allworthy has reported a case in which the beard reached the length of 130 inches; the carpenter of Edam had one nine feet long. Beigel relates that Negreni, a female dancer, had hair over nine feet long, the increase in length following an acute illness. The axillary and pubic hair may likewise grow to an unusual length.

A partial hypertrichosis, usually of a transient character, occasionally follows local irritation, such as may result from the application of a blister, or repeated friction (Boyer, Rayer, Osiander, quoted by Kaposi); Kaposi relates the case of a woman in whom an abnormal growth of hair occurred upon the back of the hand after rubbing in mercurial ointment for three weeks. The author has knowledge of a case in which frictions with cosmoline after a fracture of the forearm was followed by a vigorous growth of hair in the region rubbed; the hair reached a length of three or four inches, but soon fell off when the frictions were stopped.

Etiology and Pathology.—Congenital general hypertrichosis frequently exhibits a markedly hereditary character, and the same is true, but to a less degree, perhaps, of some of the acquired partial forms, such as those which affect the beard and scalp. The facial hypertrichosis of women is, according to Jackson's statistics, frequently hereditary; out of 350 cases this author found hirsuties on the maternal side in 41 per cent. Derangement of the sexual apparatus is likewise a predisposing factor in this form of hypertrichosis. In many instances there is a decided increase in the growth of hair in the face after the menopause. As illustrative of the influence of disease of the sexual organs upon the growth of facial hypertrichosis, the case reported by Hyde may be referred to. A woman thirty-five years old, the mother of three children, ceased to menstruate, and developed a general and facial hirsuties, the latter resulting in the growth of a full beard and mustache. Two or three years later menstruation returned, and with its reappearance the general hypertrichosis spontaneously disappeared.

The association of certain cases of local hypertrichosis, affecting the lumbar and sacral regions, with spina bifida has already been referred to. In a small number of cases an abnormal growth of hair

has been observed to follow spinal paralysis or injury to peripheral nerves (Schiefferdecker and others).

According to Unna, congenital hypertrichosis is to be regarded as an arrest of development of the hair, a trichostasis. The foetal hair, instead of falling, continues to develop, producing a general hairiness.

Treatment.—The circumscribed forms, such as hairy moles and facial hypertrichosis, alone are amenable to treatment, and it is chiefly these for which the physician's advice is sought. Although various methods have been devised for the destruction of the superfluous hairs, there are practically but three methods to be considered, viz., the use of depilatories, electrolysis, and the X-ray. The use of depilatories is only a temporary expedient, as the hair grows again and the depilatory must be reapplied at intervals of a week or two. The following, in which barium sulphide is the active agent, is a useful formula:

℞

Barii sulphid. 3iij (12.0)
Pulv. zinci oxid.
Pulv. amyli .....āā ℥ss (16.0)

M.
Sig. Mix with water and apply as a paste.

When slight burning is perceived the paste is to be removed, scraped, or washed off, and cold cream or a dusting powder applied for a short time, as more or less irritation is produced. Some degree of caution is necessary in the use of all depilatories, as considerable inflammation of the skin may follow their employment unless due care is exercised.

In the vast majority of cases electrolysis is the method of choice; indeed, it is the only safe practicable method of permanently destroying the hair. Very briefly, the method consists in the electrolytic destruction of the hair papilla by inserting into the follicle a fine needle fixed in a suitable handle, connected with the negative pole of a galvanic battery. It was first suggested by Michel, of St. Louis, in 1875, for the removal of hairs in trichiasis, and was shortly afterwards used by Hardaway in the treatment of hypertrichosis. While any form of galvanic battery will answer the purpose, some form of dry cell will be found most satisfactory. The current may be controlled by a rheostat and measured by a milliampèremeter, but these are not absolutely necessary. A current-strength of two to three milliampères is usually quite sufficient to destroy the papilla. If a milliampèremeter is not used, the current from five to ten ordinary dry cells or from ten to fifteen chloride of silver cells will be found sufficient. The most satisfactory form of needle is one made of irido-platinum, although a fine steel needle or a jeweler's "broach" will serve the purpose, the latter being preferred by Jackson. When steel needles are used care should be taken not to connect them with the positive pole accidentally, as oxidation of the needle will occur, producing a small black dot at the point of insertion. When the face is the region to be operated upon, as it is in the great majority of cases, the patient should

be placed in a reclining chair in a good light, holding in her left hand by its non-conducting handle a wet sponge electrode, which should be at least three inches in diameter, connected with the positive pole of the battery. The needle is gently inserted in the follicle, using it as a probe to enter an already existing passage, and not to force a new one, and when the bottom of the follicle is reached, which is indicated by a slight increase in resistance to the needle, the patient is directed to grasp the sponge with her right hand, thus completing the circuit. Within a few seconds slight frothing appears at the mouth of the follicle, and after twenty to thirty seconds the circuit should be broken by removing the hand from the sponge, when the needle may be withdrawn; if the needle is withdrawn first a slight shock is apt to be produced. If the papilla has been destroyed the hair will be found to be quite loose so that it may be extracted easily with forceps; if, on the contrary, it is still firmly fixed in the follicle the operation has been a failure and must be repeated at another sitting. The operation usually gives rise to some pain, which, however, is rarely severe enough to cause the patient real distress. From forty to fifty hairs may be removed at a sitting, but they should not be removed too close together at the same sitting, since scarring may result from neglect of this precaution. After the operation the part operated on should be bathed for a few minutes in hot water and afterwards annointed with cold cream or covered with some dusting powder.

When the number of hairs is very great, their removal by electrolysis is practically impossible, owing to the length of time required; under such circumstances the X-ray may be used, giving an exposure just sufficient to produce a mild erythema, measuring the exposure by means of a meter, such as the Holzknecht or the Sabouraud-Noire pastile. This agent is to be employed, however, with the utmost care, since great harm may be done with it even in the hands of an experienced operator. Ill effects, such as a persistent dermatitis, followed by disfiguring telangiectases, and atrophy of the skin, may appear months or even years after its employment.

The fine cylindrical knives devised by Kromayer and the fine thermocautery, microbrenner, employed by Unna are so far inferior to electrolysis in every respect that while they are mentioned they are not recommended.

ATROPHIA PILORIUM PROPRIA

FRAGILITAS CRINIUM

Synonyms.—Scissura pilorum; Fissura pilorum; Trichoptilosis.

Definition.—Abnormal dryness with brittleness of the hair.

Symptoms.—The hair may be abnormally dry and break readily as a symptom of disease of the hair itself, such as ringworm or favus, or of some chronic inflammatory affection of the scalp, such as eczema, psoriasis, seborrhœic dermatitis; or the abnormal dryness may be secondary to some general constitutional disease, such as typhoid

fever, syphilis, tuberculosis, leprosy, which seriously impairs the general nutrition. Much less commonly it occurs as an idiopathic affection unaccompanied by any manifest or discoverable local or general disease.

In the symptomatic form the hair is abnormally dry, without its accustomed lustre, and often much thinned, owing to the readiness with which it splits up and breaks off with handling or even spontaneously. In the idiopathic form longitudinal splitting of the shaft frequently takes place at the ends, in its continuity, or within the follicles, the last only rarely. A splitting of the ends of the hair of the scalp which may extend some distance is common in the long hair of women; much less frequently a similar condition is seen in the hair of the beard. In rare cases the splitting begins in the bulb, as in those reported by Duhring, Parker, Hyde, and Crocker. In Duhring's case the disease occurred in the beard and was accompanied by great irritation and inflammation of the follicles. It may affect hairs irregularly scattered throughout the scalp or beard, or it may be confined to certain limited areas.

Etiology and Pathology.—As already observed, the symptomatic form may result from the invasion of the hair by parasitic organisms, or may be the result of a lowering of the nutrition of the scalp from local or general causes. The cause of the idiopathic form is for the most part unknown. Kaposi attributed the splitting of the ends of the hair to its comparative remoteness from the papilla, the source of its nutrition, but since short hairs are at times affected as well as long ones, this is hardly an adequate explanation. Doubtless mishandling of abnormally dry hair by the patient herself or by hairdressers is frequently responsible for the condition in women.

Beyond the dissociation of the fibres of the shaft, but little is to be seen microscopically in most cases; in the case reported by Duhring, however, there was a decided atrophy of the bulb. Spiegler has announced the finding of a bacillus in the hair with which he succeeded in reproducing the affection, but this finding still awaits confirmation by other investigators.

Treatment.—The affection is apt to be persistent. When it is secondary to some other local or general disease, this must receive attention. The scalp should be washed at intervals of two or three weeks, avoiding much rubbing, and the cleansing followed by inunctions of small quantities of vaseline, oil of sweet almond, or oil of sesame. The split ends of the hairs should be cut off, and when the beard is affected daily shaving for a time should be advised.

TRICHORRHEXIS NODOSA

Synonyms.—Clastothrix; Trichoclasia; Trichoptilose (Devergie); Auftreibung und Bersten der Haare (Beigle).

Definition.—An affection of the hair characterized by longitudinal splitting and nodose swelling of the shaft.

Symptoms.—As "swelling and bursting of the hair" Beigel described this affection in 1855, although it had been recognized previously by Wilson and Wilks, the former giving it the name fragilitas crinium. The name by which it is generally known at present was given it by Kaposi in 1881.

It is characterized by one or more grayish or whitish nodose swellings of the hair-shaft, which at a little distance may be mistaken for the ova of pediculi, but which on nearer examination are seen to involve the entire thickness of the hair instead of being attached to it. They are produced by the longitudinal splitting and spreading out of a small section of the shaft, producing an appearance which has been aptly likened to the interlocking of two small brushes which have been pushed together (Fig. 226); the shaft is frequently broken off at the site of the nodes, leaving brush-like ends. In the great majority of cases the disease is limited to the mustache and beard, although it may also occur in the scalp, axillary, and pubic hairs. Hodara has described a form observed frequently in the hair of the scalp of women in Constantinople, which differs slightly from the ordinary form in

FIG. 226.—Trichorrhexis nodosa.

that the nodes are quite small and splitting of the shaft occurs not only at but between the nodes. As a rule it is the distal third of the shaft that is affected, the proximal portion being free and firmly fixed in the follicle; the number of nodes on a hair varies from one to eight or ten, placed at irregular intervals. No subjective symptoms accompany the affection, which is usually discovered accidentally in handling the beard or mustache.

Etiology and Pathology.—The malady is infrequent, although probably not so rare as commonly stated, since, owing to its comparatively trivial character and the absence of subjective symptoms, it is frequently overlooked by the patient and seldom brought to the notice of the physician. As already observed, it is much more frequent in men than in women, although Raymond found it present in the hair of the labia majora of a large proportion of women examined, and Hodara has noted its frequent occurrence in the scalp hair of the women of Constantinople. Its direct cause has not yet been definitely determined. Of the earlier observers, Beigel thought it due to the accumulation of a gas in the hair which burst it, while Wilson regarded it as the result of some nutritive disturbance. McCall Anderson observed it in parents and children, and concluded that heredity

played a part in its production, but, as Raymond has pointed out, this can just as reasonably be attributed to contagion as to heredity. In recent years a number of investigators (Raymond, Hodara, Spiegler, v. Essen, Markusfeld, de Keyser) have found microörganisms in the nodes, which they have regarded as the etiological factor. Hodara found a small bacillus which he named the *bacillus multiformis trichorrhexides*, with cultures of which he succeeded in producing the affection experimentally. Ravenel, who suffered from it himself in his mustache, records the interesting fact that his tooth-brushes and shaving-brushes presented nodes similar to those in his mustache; other observations of a similar kind have been made by Blaschko, Jadassohn, and others, who found nodes in the brushes of hair-dressers. Wolfberg, Sabouraud, Brocq, and others believe it due to mechanical injury of the shaft occurring in those with abnormally dry hair.

According to Kaposi, the affection begins with a longitudinal splitting of the cortex and an increase in the thickness of the medulla. After a time the medulla disappears and fracture of the shaft occurs at the site of the node. Eichhorst found numerous droplets of fat between the cells of the medulla, and numerous particles of extraneous matter are entangled in the fine fibres of the nodes.

Prognosis and Treatment.—The malady is a very intractable one and often refuses to yield to the best-directed treatment. When it affects the beard and mustache, daily shaving should be advised and continued for some time. In view of its probable infectious nature, parasiticide lotions and ointments may be employed. Sabouraud recommends the following lotion:

℞

Hydrarg. bichlorid.	gr. vijss (0.50)
Sp. ætheris,	
Alcoholis	āā f℥ iv (125.0)
Resorcini	℥ss (2.0)
Acid. tartaric.	℥ss (2.0)

Schwimmer advises the use of a 3 per cent. ointment of sulphur, while Jadassohn recommends a 1 per cent. ointment of pyrogallol. Besnier applied tincture of cantharides, pure or diluted, according to the amount of irritation produced. Sack thinks epilation a useful auxilliary. Joseph, who believes the nodes produced mechanically, forbids washing the hair, and applies daily oil of sweet almond or castor oil largely diluted with alcohol.

MONILETHRIX

Synonyms.—Aplasia pilorum intermittens; Fr., Nodosité des poils; Ger., Spindelhaare.

Definition.—A congenital affection of the hair distinguished by constrictions occurring at regular intervals throughout its entire length.

Symptoms.—This rare affection was first described in 1879 independently by Walter Smith and Luce; since then cases have been reported by Behrend, Lesser, Hallopeau, Sabouraud, Gilchrist, Ruggles, and a number of other English, French, German, and American observers. Quite recently MacKee and Rosen have published a very thorough study of its clinical features and histopathology.

It is characterized by constrictions of the hair-shaft regularly placed at intervals of about a millimetre throughout its entire length, includ-

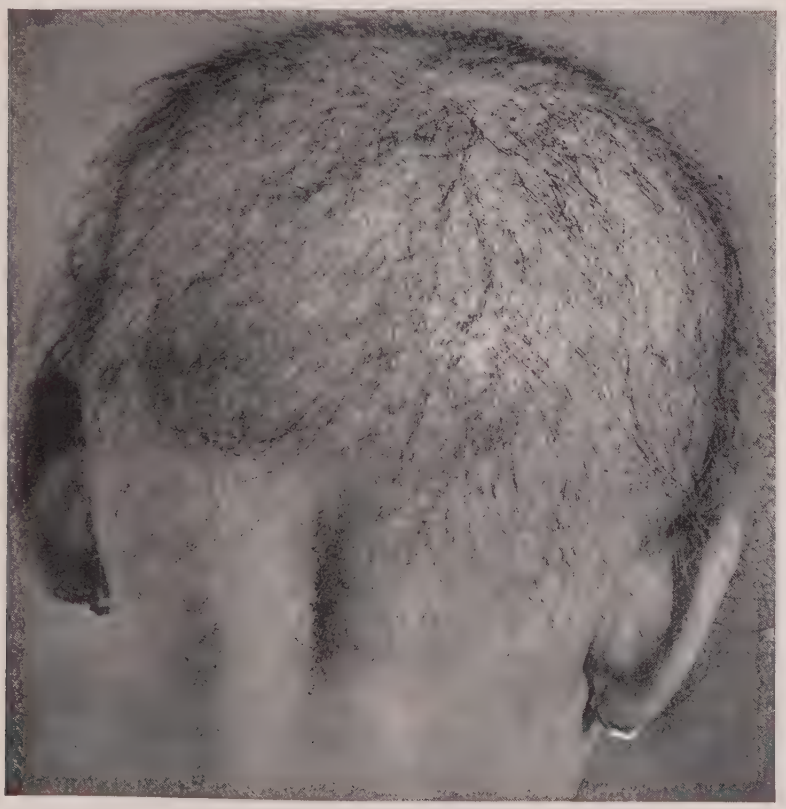


Fig. 227.—Monilethrix. (Dr. Geo. M. MacKee.)

ing the root, giving to the hair a beaded appearance. Although commonly described as consisting of alternate constrictions and fusiform swellings or nodes, it is only the former that are pathological, since the so-called nodes are in fact portions of the normal hair-shaft which present a deceptive appearance of nodes or swellings in contrast with the constrictions. When viewed by transmitted light the fusiform portions of the shaft are dark, while the constrictions are lighter in color or white and translucent. Fracture of the shaft occurs readily at the constrictions, and in consequence the

hair is quite short, and partial or in exceptional cases complete baldness results. The entire scalp is usually affected, but it may be for a time limited to certain parts of it, and exceptionally the brows or the hair of extremities may be affected; in the cases reported by Gilchrist and Ruggles it was limited to the legs. In most of the cases a more or less marked keratosis pilaris accompanies the disease, the follicles being filled with small plugs of horny epithelium. In exceptional cases the scalp is scaly and inflammation of the follicles is present (Fig. 227).

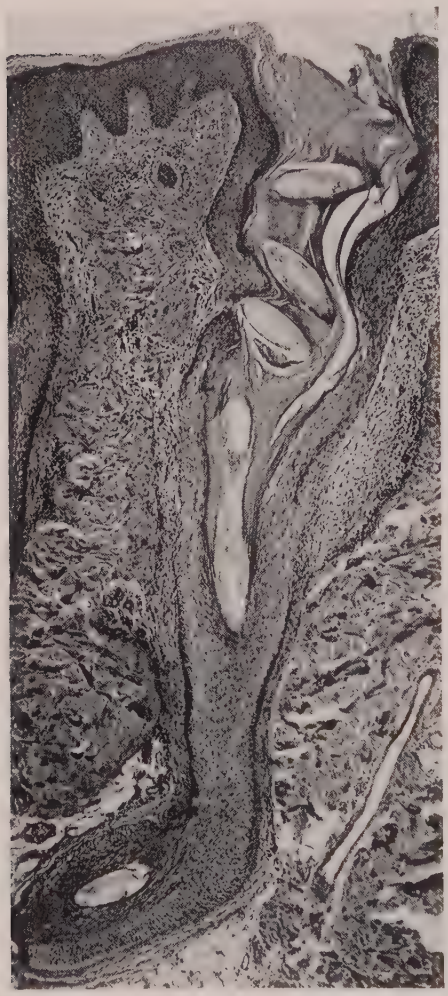


Fig. 228.—Monilethrix. Section of follicle containing twisted hair with nodes. (Dr. Geo. M. MacKee.)

Etiology and Pathology.—Both sexes are alike affected. In a large proportion of the reported cases it was congenital or appeared shortly after birth; in a much smaller proportion it appeared for the first time some years after birth. Anderson has reported the occurrence of fourteen cases among twenty-seven individuals in six generations of one family; Sabouraud found seventeen cases in five generations, and other, but less striking, examples of its hereditary character have been observed by Payne, Lesser, Hudelo, Tenneson, and others. There is, accordingly, but little doubt that heredity plays an important rôle in its production.

The pathogenesis of the affection still awaits a satisfactory explanation. Smith and Virchow attributed it to periodic variations in the formative activity of the cells of the hair-bulb. Bonnet and Unna explain the formation of the constrictions by supposing a periodic contraction of the follicles, due to variations in the tonicity of their muscular and elastic elements.

The pathological alterations of the hair are limited to the constrictions, the so-called nodes being, as already noted, normal portions of the shaft. At the site of the constrictions the medulla has disappeared and fracture is common. MacKee and Rosen found the upper part of the

follicles dilated, with a marked increase in keratinization, producing large hyperkeratotic masses, which occluded the follicle and compelled the hair, which was rotated upon its axis, to take a tortuous course. (Fig. 228.) Both the external and internal root-sheaths were well developed. The inner sheath was apparently normal in the region of the bulb, its two layers well differentiated, but as it ascended the nuclei and keratohylin granules disappeared from Huxley's layer and the sheath became homogeneous. The superficial vessels of the corium were slightly dilated and surrounded by a moderate exudate of small lymphocytes.

Diagnosis.—Monilethrix is to be differentiated from trichorrhexis nodosa, from intermittent graying of the hair (ringed hair), and from ringworm of the scalp. In the first of these affections fractures occur at the nodes and not in the thin parts of the hair-shaft, as in monilethrix; in intermittent graying of the hair there are no nodes, but alternate sections of white and dark hair; ringworm usually occurs in patches and the trichophyton is readily found in the hair; lastly, none of these diseases is congenital.

Prognosis and Treatment.—Spontaneous recovery never occurs, although improvement has been noted in rare cases. Treatment has but little, if any, effect. Stimulating lotions and ointments of sulphur and salicylic acid may, however, be found useful.

PLICA

Synonyms.—Plica Polonica; Ger., Weichselzopf; Fr., Plique polonaise.

Definition.—A matted condition of the hair of the scalp.

Symptoms.—The early authors devoted considerable space to the consideration of plica, and, according to the appearances presented, divided it into a number of varieties. Hebra and Kaposi, however, showed quite conclusively that it was not a disease, but a condition arising from neglect. The entire scalp may be covered with a mass of hair inextricably tangled together, filled with swarms of pediculi and innumerable ova, giving off an exceedingly disagreeable rancid odor. The scalp beneath may be quite normal in appearance, or it may be red and crusted, or moist and oozing, owing to the irritation produced by the presence of pediculi and scratching.

As plica neuropathica a small number of cases have been reported (Le Page, Pestonji, De Amicis, Stelwagon, and a few others) in which matting of the hair was confined to a limited area of the scalp which showed no evidences of neglect, and in a few instances appeared quite acutely. In the case observed by Le Page the condition appeared shortly after washing the hair in warm water, and Pestonji has reported a case having a similar origin. Ohmann-Dumesnil has reported a case in a girl sixteen years old in whom matting of the hair followed suppression of the menses. In Stelwagon's case, which was seen by the author, the matting was confined to an area in the

occipital region about the size of a silver dollar and formed a rope-like lock four feet long; the scalp was perfectly clean and free from pediculi.

Etiology.—As already observed, the condition is commonly the result of neglect; the nervous origin of the neuropathic form is purely hypothetical.

Treatment.—Thorough soaking of the tangled mass with olive oil or oil of sweet almond and the patient use of the comb will usually disentangle the hair. When the condition is limited to a circumscribed area the quickest way to get rid of it is to cut off the matted hair with the scissors, but not infrequently, owing to some superstitious notion, the patient will not permit this to be done.

PIEDRA

Synonyms.—Trichosporie (Vuillemin); Piedra nostras (Unna); Tinea nodosa (Morris and Cheadle); Trichomycose nodulaire (Juhel-Renoy).

Definition.—A parasitic affection of the hair endemic in Colombia, but also occurring sporadically in rare instances in Europe, characterized by minute hard concretions attached to the hair-shaft.

Symptoms.—First described by Osorio, this affection occurs in two forms, one endemic in Colombia, where it is found almost exclusively in the valleys of Cauca, and a second, which has been met with sporadically in various parts of Europe.

The endemic Colombian variety is confined almost exclusively to the hair of the scalp in women, although it is in exceptional cases seen in the mustache and beard in men. It is characterized by minute dark or black concretions of stony hardness, situated on the shaft of the hair at intervals of one-half to two centimetres, beginning about a centimetre from the surface of the scalp. When the concretions are numerous, combing or shaking the hair produces a rattling sound.

In the European variety, or piedra nostras (tinea nodosa), similar, but somewhat larger and softer, nodules and sheath-like deposits occur upon the hair-shaft of the hair of the mustache and beard, to which regions it is limited.

The affection described by Beigel in 1869 as "chignon disease" is regarded by Behrend and others as identical with piedra.

Etiology and Pathology.—Morris believes the probable cause of the malady, as observed in Colombia, is to be found in a mucilaginous oil which the native women apply to the hair of the scalp for cosmetic purposes; other authorities think it possibly due to the peculiar mucilaginous properties of the water of certain sluggish streams in the regions in which the affection is endemic. The parasitic nature of the disease, however, has been established by the studies of Behrend, Juhel-Renoy, Unna, and others, who found various forms of spores in the nodular masses. The Colombian variety is due to the *trichosporum giganteum;* piedra nostras to a somewhat similar organism, the

Trichosporum ovale. It is altogether likely that the various organisms described are variations of one pleomorphic fungus. The spores which form the nodules are held together by a glutinous material which Vuillemin believed was produced by the fungus. The hair-shaft is as a rule but little or not at all affected, since the spores are situated on the outside and do not penetrate its substance.

Treatment.—An entirely satisfactory method of treatment is to wash the hair with a hot 1:1000 solution of bichloride of mercury. Besnier suggested adding 1 per cent. acetic acid to this solution. The washing should be followed by combing with a fine-tooth comb.

Diagnosis.—The affection for which it is most likely to be mistaken is lepothrix, but that malady is confined to the hair of the axillæ, scrotum, and perineal region, and the nodules frequently contain an orange-colored pigment soluble in the sweat which stains the underwear.

LEPOTHRIX

Synonyms.—Trichomycosis nodosa (Patterson); Trichomycosis palmellina (Pick).

Definition.—An affection of the axillary, scrotal, and perineal hairs characterized by fungous incrustations attached to the hair-shaft.

FIG. 229.—Lepothrix, axillary hair.

Symptoms.—This affection, which was first described by Paxton in 1869, and later given the name lepothrix by Erasmus Wilson, is

distinguished by minute nodular masses and sheath-like incrustations on and around the hair-shafts of the axillary region, and less frequently the hairs of the scrotum and perineum. The incrustations are grayish or red-brown in color, and although rather soft on hairs moist with perspiration are quite hard on dry hairs. The affected hairs are usually quite brittle and frequently break with a brush-like fracture. When the nodules are red-brown (Fig. 229) they contain a pigment which, soluble in perspiration, stains the underwear a bright orange, which is oftentimes the first and only symptom to call the patient's attention to the condition. The malady is a common one, Behrend finding it in 90 per cent. of his dispensary patients, but as it is unaccompanied by any subjective symptoms, medical advice is rarely sought for it. It is more frequent in blondes than in brunettes,

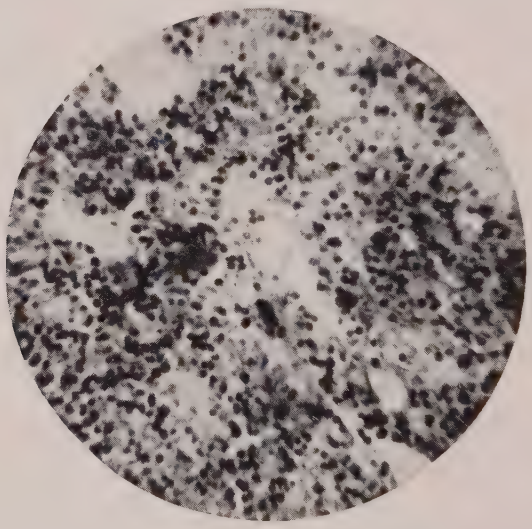


Fig. 230.—Lepothrix. Micrococci from a brownish incrustation on hair which produced orange-colored staining of the underwear—so-called red sweat.

and in those who perspire freely, but neglect of the toilet is not a cause, as is stated by some authors.

Under the names trichomycosis flava, trichomycosis nigra, and trichomycosis rubra, Castellani has described an affection of the axillary hairs in Ceylon resembling lepothrix and probably closely related to it. The incrustations are quite abundant and soft, and in exceptional cases two of the three varieties may be found on the same hair, or one axilla may present one variety, the other another.

The incrustations consist of masses of a short bacterium held together by a gloea, which penetrates the cortex of the hair-shaft so that it readily breaks off. In a study of red nodules obtained in one case from the axillary hairs, in another from hairs in the perineum, the author found masses of a micrococcus (Fig. 230) which in cultures was arranged in tetrads or groups of four. In the Ceylon affection

Castellani found great numbers of bacilli in the yellow variety and cocci in the black and red forms.

The affection is readily recognized. Its limitation to the axillary and scrotal hairs and the presence of the incrustations, which when of the red-brown variety stain the underwear, are sufficiently characteristic to prevent its being mistaken for any other condition.

Treatment.—Although commonly regarded as readily curable by the use of parasiticide lotions, such as a solution of bichloride of mercury, 1:1000, this has not been the author's experience. Unless the use of such lotions is preceded by shaving of the affected regions but little can be accomplished, and it is likely to persist for an indefinite period. Castellani applies a 2 per cent. solution of formalin in alcohol two or three times a day, and a 2 per cent. ointment of sulphur at night. The formalin solution should be used somewhat cautiously, as it is likely to cause considerable dermatitis after a little while.

ALOPECIA

Synonyms.—Calvities; Baldness; Fr., Alopécie; Ger., Kahlheit.

Definition.—Baldness, especially of the scalp, but also affecting other hairy regions. It may be local or general, partial or complete, congenital or acquired.

According to its causes, course, and clinical symptoms, it presents a number of varieties, of which the following are those generally recognized by authors: alopecia congenita; alopecia prematura; alopecia senilis; alopecia areata.

ALOPECIA CONGENITA

Synonyms.—Alopecia adnata; Hypotrichosis; Oligotrichosis; Fr., Alopécie congenitale.

Symptoms.—In congenital alopecia, which is a rare variety, the hair may be entirely absent at birth, or, what is more frequent, it is scanty, patchy, or imperfectly developed. In the cases in which it is entirely wanting there is commonly some associated anomaly of development of the teeth and nails. Occasionally the hair is present in normal quantity and quality at birth, but shortly falls, and is not reproduced, or is reproduced imperfectly and incompletely (hypotrichosis). In certain other cases of congenital alopecia the baldness is not permanent, but is due to delayed development of the hair, which eventually is produced in normal quantity. Congenital alopecia frequently presents a more or less marked familial character, and the number of instances in which it has been observed in two or more members of the same family or in succeeding generations is relatively large. A striking example of this peculiarity is furnished by Nicolle and Halipré, who have reported the occurrence of thirty-six cases of defective development of the hair and nails in six generations of one family; Charles J. White has reported a similar, though less extensive, series (seven cases in four generations). Congenital ab-

sence of hair may be a racial peculiarity; Hill has reported the existence of a hairless tribe of Australian aborigines.

Etiology and Pathology.—The only etiological factor of which we have any definite knowledge is heredity, and there is apparently but little doubt that in a very large proportion of the cases of this variety of alopecia this is the chief, if not the only, cause.

Congenital alopecia is to be regarded as an anomaly of development rather than a disease. Its histopathology has been studied by Schiede, Jones and Atkins, and Ziegler. In the cases studied by the last-named, hair and hair papillæ were entirely absent, but the sweat- and sebaceous-glands were quite normal in appearance. In the neighborhood of the sebaceous glands were epithelial tubes surrounded by circularly arranged connective-tissue tracts in which terminated smooth muscle fibres resembling those of the arrectores pilorum; Ziegler regarded these tubes as "rests" of external root-sheaths.

ALOPECIA SENILIS

Symptomatology.—Senile alopecia, or that which appears after fifty years of age, usually begins on the vertex, but may begin on the anterior portion of the scalp. The hair loses its lustre, becomes thin and fine, and sooner or later a bald patch is formed, which spreads in all directions, until in many cases a large part of the scalp is bare. The bald area is usually quite smooth, oily, and shining, but may be slightly scaly and dry from a mild seborrhœa. In a certain proportion of cases the hair on other parts of the body, such as the beard and the pubic region, is less vigorous than in early life and may also fall to some extent. The loss of hair is in most cases accompanied by other senile changes, such as whitening of the hair and atrophy of the skin. It is much less frequent in women than in men, and when it does occur is usually much less extensive.

Senile alopecia is a part of the atrophic changes which take place with advancing years. Unna, however, has called attention to the fact that the hair on other parts of the body frequently becomes stiffer and stronger in old age, and thinks it possible that the loss of hair upon the scalp in the aged is the result of a mild unrecognized seborrhœa.

Michaelson found a fibrous endarteritis of the vessels of the scalp which narrowed their lumen and led to partial destruction of the capillary network surrounding the hair-follicles, which were shrunken and filled with horny epithelium. Unna found practically the same changes but does not believe that the hair loss is produced by the endarteritis.

ALOPECIA PREMATURA

By alopecia prematura is understood loss of hair occurring in young subjects, *i.e.*, before twenty-five or thirty years of age. It may occur

independently of any recognizable disease of the scalp or general disturbance, alopecia prematura idiopathica; or it may be the result of some local affection of the scalp, or secondary to some constitutional disease, alopecia prematura symptomatica.

Alopecia Prematura Idiopathica.—The idiopathic form of premature alopecia usually begins at the temples and on the vertex, or in one or the other of these regions. The hair fall is increased and coincidently there is a progressive enfeeblement of the new-growth until there is nothing but a fine and scanty down which, too, in turn disappears, leaving the greater part of the scalp bare, smooth and shining. Quite commonly the loss of hair is rapid, more or less complete baldness appearing in the course of some, sometimes a few, months. When it begins upon the vertex it produces a circular tonsure-like patch which spreads in all directions: when it begins at the temples the hair recedes on both sides, often leaving a central patch, which may persist for some time after the remainder of the scalp is quite bald. In advanced cases the greater part of the scalp may be bare, a narrow fringe remaining above the ears and in the occipital region only. Premature alopecia of this variety is much more frequent in men than in women, indeed it is quite uncommon in the latter, and when it does occur almost never reaches the proportions frequently seen in men.

Alopecia Prematura Symptomatica, or that variety secondary to local disease of the scalp, or to some general infection such as syphilis, typhoid fever and the like, varies a good deal in its symptoms and course according to its causation. As in the other forms of baldness it may be partial or complete, and may involve other hairy regions as well as the scalp.

By far the most common form of symptomatic alopecia is that which follows seborrhœic dermatitis of the scalp (alopecia pityrodes, alopecia furfuracea). The fall of the hair is preceded for a variable period, usually considerable, by a more or less abundant scaling of the scalp, which may be dry and bran-like or somewhat greasy, in the latter case forming fatty crusts. After a time the hair-fall is increased and the hair upon the anterior portion of the scalp and on the vertex becomes increasingly thinner until partial or complete baldness results. Exceptionally the loss of hair takes place with comparative rapidity.

More or less loss of hair frequently follows certain general diseases, especially those attended by elevation of temperature for a considerable period, such as typhoid fever, pneumonia, erysipelas (defluvium capillorum). With the appearance of convalescence the hair falls out rapidly and abundantly, although complete baldness seldom occurs. The loss of hair is commonly temporary and lasts but a comparatively short time, although there are exceptions to this rule.

A temporary alopecia is a fairly common symptom of the secondary

stage of syphilis (alopecia syphilitica). It occurs as a diffuse thinning of the hair of the scalp or in ill-defined patches; the loss of hair is seldom sufficient to produce complete baldness. Areas of complete and permanent baldness may result from the ulcerative lesions of late syphilis when these are situated in the scalp. Alopecia confined to the site of the eruptive lesions is common in lepra. Inflammatory diseases, such as eczema and psoriasis, when situated upon the scalp, may be followed by a certain amount of thinning of the hair, but actual baldness seldom results. Lupus erythematosus of the scalp, folliculitis decalvans, and morphœa (localized scleroderma) are infrequent causes of patches of permanent baldness.

Disease of the scalp due to the vegetable parasites, such as ringworm and favus, are attended by partial or complete circumscribed loss of hair. In the former the loss of hair is usually temporary, but may be permanent after the inflammatory forms (kerion); in favus the hair-follicles are often entirely destroyed with permanent loss of hair in the affected areas.

Etiology and Pathology.—There is little or no doubt that a tendency to early loss of hair is inherited and heredity is probably the most active of the causes which predispose to premature alopecia. The wearing of stiff hats, which interferes with the circulation of the scalp and leads to a lessening of its nutrition, is regarded by some authors (Jamison, King) as a predisposing factor; and Ellinger thought that the daily use of cold water upon the scalp interfered with the proper growth of the hair.

In the symptomatic varieties of premature alopecia the most frequent of all causes is seborrhœa or seborrhœic dermatitis of the scalp. According to Elliot more than 90 per cent. are due to this cause; Jackson found about 75 per cent. of his cases suffering from this affection, while White noted it in 79 per cent. A considerable number of recent investigators regard the seborrhœic affection as due to an invasion of the follicles by a small bacillus, the mocrobacillus of Sabouraud, and consequently transmissible. While there is some evidence for the contagiousness of the malady this evidence is yet far from conclusive.

In those cases in which the alopecia has followed such diseases as typhoid fever, pneumonia, erysipelas, the loss of hair is probably due to some toxin rather than the high temperature, since many cases of high temperature occur without loss of hair. The fall of hair which occurs quite commonly after pregnancy is very probably a toxic effect.

Loss of hair may follow the internal administration of thallium acetate, and is quite common after exposure of hairy parts to the X-ray.

In alopecia pityrodes there is a mild hyperkeratosis extending into the mouths of the follicles which are filled with an accumulation of horny epithelium in which are numerous microörganisms (microbacilli). The rete is at first but little altered, but in the later stages shows some atrophy. The vessels of the papillæ are dilated and are surrounded in places by a moderate cellular exudate in which are con-

siderable numbers of "mastzellen." The sebaceous glands in the early stages show but little change, but in advanced cases are more or less atrophied.

Prognosis.—The prognosis of all the varieties of alopecia depends largely upon the causes. In the congenital, senile and idiopathic premature forms the prognosis is most unfavorable, although in rare instances hair does eventually appear in the congenital variety and may be partially restored in the other forms. In alopecia pityrodes the prognosis is fairly favorable if treatment is undertaken early and carried out persistently and methodically. In cases of defluvium capillorum following typhoid fever, pneumonia, erysipelas, and in syphilitic alopecia the hair usually returns within a comparatively short time. In the patchy baldness following local affections of the scalp, like erythematous lupus and folliculitis decalvans, the loss of hair is irreparable, as the follicles are destroyed.

Treatment.—When there is a hereditary tendency to early loss of hair prophylactic measures are indicated. The scalp should be kept clean by an occasional shampoo or by washing it with tincture of green soap and warm water followed by cold, following the shampoo or the washing by the application of a small quantity of some bland oil, such as oil of sweet almond, oil of sesame or vaseline. Under ordinary circumstances a shampoo every two or three weeks is quite often enough; but for those who are much exposed to dust it may be necessary to cleanse the scalp more frequently. Daily brushing the hair with a stiff brush for a few minutes is also useful, as well as gentle massage two or three times a week. Men should wear soft rather than stiff hats and should not wear them in-doors.

While there are few if any remedies which exert a direct effect upon the growth of the hair, internal treatment is frequently indicated by the patient's general condition. Iron, arsenic, strychnia, cod-liver oil and other remedies of a similar kind may be of use in certain cases, owing to the presence of anæmia, or debility. In syphilitic alopecia antisyphilitic remedies are, of course, indicated as in any other manifestation of syphilis. As there is some evidence that pilocarpin stimulates the growth of the hair small doses, from a one-twentieth to one-fifteenth gr. (.003–004) three times a day, may be given for short periods.

The chief reliance must be placed, however, upon local treatment, and this consists for the most part in the application of stimulating ointments and lotions and the use of such procedures as, by attracting an increased blood-supply to the scalp, tend to increase the nutrition of the hair-producing apparatus. Certain mechanical procedures, such as vigorous brushing and massage to which reference has already been made, are of decided use and should be employed methodically and judiciously. The faradic brush and the high-frequency spark may also be employed for the same purpose. The list of local remedies is a long one and most of them have in common the property of producing

more or less irritation and local hyperæmia and many of them possess parasiticide properties. Ammonia, acetic acid, carbolic acid, capsicum, cantharides, sulphur, tar, are some of the drugs which are employed locally, either as lotions or as ointments, with more or less favorable effect.

Jackson speaks in laudatory terms of the following lotion containing pilocarpin, which, as already mentioned, probably exerts a directly stimulating effect upon the growth of the hair:

℞
Pilocarpin. muriat. ....gr. xx (1.33)
Spt. odorati .....f℥ iv (16.0)
Aq. rosæ,
Alcoholis absolut...āā partes æquales q. s. ad f℥ viij (250.0)
M.
Sig. Rub in well night and morning with the finger.

Quinine has long had a reputation as a "hair tonic," although it is somewhat doubtful if it is deserved; it is usually used as a lotion, either alone or combined with some stimulating substance, as in the following:

℞
Spt. formicarum .....f℥ ij (64.0)
Quiniæ sulphat. .....gr. xvi (1.0)
Aq. Cologniens. .. ..f℥ i (32.0)
M.
Sig. Apply with gentle friction once a day.

Paschkis thinks the best results follow the use of the preparations of the bark, probably because of the tannic acid which they contain. The following lotion, containing acetic acid, a chemically incompatible mixture, has been recommended by Cottle:

℞
Acid. acetic.....f℥ iv (16.0)
Pulv. boracis.....℥i (4.0)
Glycerini .....f℥iii (12.0)
Alcoholis .....f℥ss (16.0)
Aq. rosæ ..... q. s. ad f℥viii (250.0)
M.

The following is an old and useful stimulating lotion containing cantharides in combination with capsicum:

℞
Tr. cantharidis .....f℥ i–f℥ iv (3.40–16.0)
Tr. capsici .....f℥ iv–f℥ i (16.0–32.0)
Ol. ricini .....f℥ss (2.50)
M.

The treatment of alopecia pityrodes, or that which follows seborrhœa or dermatitis seborrhœica of the scalp, is essentially the treatment of the seborrhœic affection. The scalp should first be freed of crusts and scales by washing it with tincture of green soap and warm water, after which the remedy chosen may be applied. Probably the most effective of all the local remedies for seborrhœa is sulphur which, owing to its insolubility, is usually employed as an ointment. The

sulphur "cream" devised by Jackson some years ago is a very agreeable and effective preparation; the formula is as follows:

℞

Ceræ alb. .....ʒ vij (28.0)
Ol. petrolati .....fʒ v (155.0)
Aq. rosæ .....fʒ ijss (75.0)
Sodii biborat. .....gr. xxxvj (2.30)
Sulphur. præcip. .....ʒ vij (28.0)

M.

This should be rubbed into the scalp every night; after four days the scalp should be washed with tar soap and water, dried, and the cream reapplied. If more stimulation is thought desirable 2 or 3 per cent. of salicylic acid may be added. An equally agreeable and effective ointment is the following, in which the base is *eucerin*, a lanolin derivative:

℞

Sulphur. præcip. .....ʒss (2.0)
Eucerin .....ʒ i (32.0)

The author has used this with very satisfactory results, occasionally adding 1 per cent. pilocarpin muriate to it.

Resorcin is another useful agent, but less so than sulphur; it may be used as an alcoholic lotion, 3 to 5 per cent., or as an ointment of the same strength, applied once a day. Owing to the staining which it causes it should not be used in those with white or light hair. Charles J. White prefers a modification of resorcin, *euresol*, as more effective, which he combines with mercuric bichloride in a lotion.

℞

Hydrarg. bichlorid. .....gr. iv (0.24)
Euresol .....ʒ ij (8.0)
Spt. formicar. .....fʒ i (32.0)
Ol. ricini .....fʒ i–iij (4.0–12.0)
Alcohol, 70% .....q. s. ad fʒ viij (250.0)

M.

A 4 to 5 per cent. solution of chloral hydrate in water or 70 per cent. alcohol is a cleanly and agreeable application which is frequently effective in mild cases; if there is much oiliness of the scalp an equal quantity of tannic acid may be added with advantage, but this addition should not be made in the case of those with blonde or white hair, as it stains slightly. The various preparations of tar are frequently serviceable, but their strong odor and the staining which accompanies their use limits their usefulness considerably. The following, which contains a deodorized and decolorized tar, is used by Joseph:

℞

Anthrasol. .....♏ xlv (3.0)
Ol. aurant. flor. .....♏ iv (0.25)
Spt. saponis kalin. .....fʒ i (32.0)
Alcoholis 90% ..... q. s. ad fʒ v (150)

Sack recommends the following compound tar ointment:

℞

Anthrasol. .....f℥ ss–f℥ i (2.0–3.0)
Sulphur. præcip. .....gr. lxxv–cl (5.0–10.0)
Resorcin. .....gr. xv (1.0)
Tr. cantharidis .....f℥ ss–f℥ i (2.0–5.0)
Ungt. .....q. s. ad ℥ iss (50.0)

M.

These may be rubbed in gently for some minutes once a day.

Lassar, who was fully convinced of the contagious character of this form of alopecia, devised the following somewhat complicated treatment which he found very efficacious in bringing about a return of the hair. The scalp is to be washed daily with a strong tar soap, rubbing in the lather for fifteen minutes. It is then rinsed off with warm, followed by cold, water and a wash composed of equal parts of a 1:300 solution of bichloride of mercury, spirits of Cologne and glycerin is thoroughly applied. The scalp is then dried and an alcoholic solution of naphthol, one to one and a half per cent. strength, is rubbed in and finally a one and a half per cent. carbolized oil is applied.

For some years the author has used with considerable satisfaction an ointment containing 10 to 15 per cent. of betanaphthol, usually employing eucerin as a base; this is decidedly stimulating and parasiticide and rarely if ever produces undue reaction.

ALOPECIA AREATA

Synonyms.—Area Celsi; Porrigo decalvans; Alopecia circumscripta; Fr., Pélade.

Definition.—Loss of hair occurring in circumscribed areas, usually confined to the scalp and beard, but also affecting at times other parts of, or exceptionally the entire, hairy system.

Symptoms.—In the great majority of cases the affection begins without premonitory symptoms as one or more small circumscribed, round or oval patches upon the scalp completely devoid of hair. In a certain small proportion of cases, however, the patient experiences some pains in the head or itching of the scalp for some little time before the patches appear, but these symptoms are as a rule so vague and indefinite as to have little or no significance. The hair often falls quite suddenly, a patch occasionally appearing over night and spreading rapidly for a time and then becoming stationary. When small they are often discovered quite by accident, usually by some member of the patient's household or by one of his associates. There may be but a single area or there may be several, and occasionally there are many which by peripheral spread produce extensive irregular bald areas involving the greater part of the scalp (Fig. 231). The skin in the patches is whitish or pinkish, soft and smooth; in the early stages it may be slightly œdematous, but later is apt to be somewhat depressed, and the follicles less prominent than in the normal scalp. About the

borders of the spreading patches are usually a number of short hairs which may be readily plucked out, the intrafollicular portion being thinner than that which projects above the surface, the "exclamation-point hairs" of Crocker. After a period of variable duration lanugo appears in the bald areas which is in time replaced by pigmented hair. Not uncommonly, however, this new hair falls out one or more times before permanent recovery takes place; or the new hair may remain thin and soft and without pigment for a considerable time. It not infrequently happens that while new hair is growing in the early patches new bald areas appear which pursue the same course as the

FIG. 231.—Alopecia areata (in brothers).

first and in this manner the disease may be prolonged for many months. Instead of occurring in rounded or oval patches it may occur as irregular or serpiginous bands, especially about the borders of the scalp, the ophiasis of Celsus. Sabouraud regards this form as peculiar to childhood, occurring only exceptionally in adults; this does not accord, however, with the experience of most other observers.

The bearded region in men is quite commonly attacked, usually coincidently with the scalp, but occasionally alone. Exceptionally the hair loses its pigment some weeks or months before it falls out (Crocker).

In infrequent cases the loss of hair extends to the other parts of the hairy system; the brows and lashes may be lost wholly or in part and

the hair in the pubic and axillary regions may fall. In rare cases all the hair of the body may be lost, no vestige of it remaining on any part, the so-called malignant alopecia.

Under the name alopecia seborrhœica circinata Crocker has described a form of circumscribed baldness in which the bald areas, instead of being smooth and without any alteration beyond the loss of hair, present marked seborrhœic scaliness.

In a certain small proportion of cases alopecia areata is associated with other cutaneous affections, such as vitiligo (Besnier, Feulard, Dubreuilh Eddowes), scleroderma (Abrahams), and dystrophic affections of the nails (Le Sourd, Audry, Sabouraud, Wende).

The course of the affection is frequently quite erratic, the hair may return in the course of a few months, either permanently or only to fall out again one or more times; as already mentioned, new patches may appear while the old ones are disappearing, and in this manner many months or one or two years may elapse before permanent recovery. In the very extensive or universal cases it is usually some years before recovery takes place even under the most favorable circumstances.

Etiology.—Alopecia areata is most frequent between the ages of ten and thirty, is decidedly uncommon before five years, and infrequent after forty-five. Sex is without any definite influence upon its incidence, although most authorities state that it is somewhat more frequent in females than in males; my own experience has been the reverse of this. It is probable that heredity is an etiological factor in a certain proportion of cases. Sabouraud believes that syphilis is an occasional auxilliary cause, but never a primary one.

The direct cause is as yet undetermined. The chief theories concerning its causation are, first, that it is a trophoneurosis; second, that it is the result of an infection with some as yet undiscovered microorganism. In favor of the first theory are the well-authenticated cases in which loss of hair has occurred in circumscribed areas supplied by nerves which have been injured by accident or in surgical operations (Pontoppidan, Schutz, Askanazy); the occurrence of loss of hair, at times quite extensive or even universal, after severe mental shock, fright, grief, and worry; the association of the affection with other maladies of known origin; and, lastly, the experiments of Joseph, who produced patches of baldness in cats by the excision of the second cervical ganglia. Jacquet has advanced the theory that a common cause is reflex irritation in the sphere of the fifth pair of nerves arising from defective teeth, but satisfactory proof of the correctness of this theory is still lacking.

The evidence in favor of the second or parasitic theory is almost entirely clinical, but quite conclusive. Although a number of microorganisms have been described from time to time by various authors (Bazin, Thin, von Sehlen, Robinson, Sabouraud) their etiological relationship to the affection has not been established. A considerable

number of epidemics, chiefly in schools and garrisons, have been reported by Hillier, Crocker, Bowen, Feulard, and a number of others; and it is quite impossible to satisfactorily explain such occurrences on any other theory than that of infection with some microörganism. Hutchinson and Crocker regarded it as in some manner related to ringworm, the former believing that alopecia in the adult was preceded by ringworm in childhood.

The alopecia which has been observed to follow the internal administration of thallium salts, the occurrence of which has been confirmed by the experiments of Buschke, strongly suggests the probability that certain cases, particularly those in which the loss of hair is extensive and widespread, are due to some toxic substance formed within the economy.

Pathology.—The histopathology has been studied by a number of investigators, the most important studies being those of Robinson and Giovannini, who in the main agree as to the changes present. In a study of sections made from a patch of one week's duration Robinson found the rete normal, but in the papillary layer there were slight signs of inflammation which became more pronounced in the corium where there was a considerable exudate of round cells about the vessels limited to certain areas. Some of the lymph-vessels were dilated and in places contained fibrous coagula. The sebaceous- and sweat-glands were normal. Some of the follicles were empty, others contained normal or lanugo hair, and the hairs showed evidence of malnutrition, the shaft being split or broken. In chronic cases there was thickening of the vessel-walls with narrowing of the lumen. In a long-standing case with permanent alopecia the hair-follicles and sebaceous glands were destroyed. Unna does not find the cellular exudate composed of leucocytes as Giovannini states, but of connective-tissue cells. Sabouraud observed a lack of pigment in the lower layers of the rete and found considerable numbers of "mastzellen" in the cellular exudate.

The hairs show signs of disturbed nutrition; the cells of the medulla disappear and the medullary canal is in places obliterated, in others dilated; the cells of the cortex which contains a large amount of air are dissociated, leading to splitting up and breaking off of the shaft. The pigment disappears from the intrafollicular portion which resembles lanugo while in the extrafollicular part it is normal or irregularly distributed.

Diagnosis.—The suddenness of its appearance; the completeness of the hair loss; the smoothness of the patches, and the complete absence of all signs of inflammation and structural change differentiate this form of alopecia from all other forms. It is most frequently mistaken for ringworm of the scalp, but in this affection the baldness, with the exception presently to be noted, is rarely complete; the patches contain numerous stumps of broken hairs in which the ringworm fungus may be readily found with the microscope. In the infrequent, so-called bald ringworm, however, the resemblance be-

tween the two affections is very close and the differential diagnosis can only be made by a careful microscopic examination of hairs from the borders of the patches. Syphilitic alopecia rarely occurs in such sharply circumscribed patches, but rather as a diffuse thinning, producing a moth-eaten appearance. In the bald areas following lupus erythematosus, folliculitis decalvans and in ulcerative affections of the scalp well-marked symptoms of inflammation and scarring are always present.

Prognosis.—The prognosis depends largely upon the age of the patient, the type of the disease and its extent. Small patches in children and young adults usually recover within a reasonable period, although at times recovery may be delayed for some months, and exceptionally, for a year or two. When a considerable part of the scalp is denuded a guarded prognosis should be given, especially if the patient is past forty and if the affection has lasted for some time. In the cases in which a large part or the whole of the hair of the body as well as of the scalp has been lost the prognosis is very unfavorable, recovery being the exception; although attempts at reproduction of the hair in limited areas may occur from time to time, the new hair usually falls out within a short time. In very exceptional cases is the hair completely restored even after a number of years. Relapses are common in all forms of the disease.

Treatment.—In case the patient is anæmic, ill-nourished, or presents evidence of disturbance of the nervous system, functional or organic, such internal remedies as iron, arsenic, strychnia and cod-liver oil are indicated and such hygienic measures should be adopted as will tend to improve in every way the general condition. In view of Jacquet's contention that reflex irritation from diseased teeth is a common cause of the disease the condition of the teeth should be carefully investigated and defects corrected.

A number of authorities regard arsenic as exerting a favorable influence upon the growth of the hair, but the evidence for this is, to say the least, not very convincing, but it is useful, however, as a general tonic. Small doses of pilocarpin, one-twentieth grain (0.003), may be given three times a day for short periods, or it may be employed hypodermatically in the bald areas in doses of one-thirtieth grain (0.002) (Crocker, Stelwagon). Although usually without influence the author has in a few instances observed a favorable effect from thyroid in long-standing and extensive cases.

Local treatment is usually indispensable and is decidedly more effective than the general. It consists for the most part in the application of ointments and lotions which, acting as local stimulants, produce an increased afflux of blood to the affected regions. Among the most useful local remedies are chrysarobin, sulphur, carbolic acid, acetic acid, cantharides ammonia, and betanaphthol. Crocker and Stelwagon find chrysarobin one of the most effective remedies used in an ointment containing from ten to sixty grains (0.65 to 4.0) to the ounce

(32.0), well rubbed in every night. It should be employed with some care, as it occasionally produces a severe dermatitis of the face with considerable swelling; another objection to its use is the decided staining which it causes. Sack thinks nothing can take the place of pure carbolic acid applied every eight days, and MacGowan recommends trikresol used in the same way, first cleansing the scalp with benzine. These applications are usually quite painful and are followed by free exfoliation. Acetic acid is a useful topical remedy and may be used in the following mixture employed by Besnier:

℞
Acid. acetic. glacial. .....♏ viii–xxx (0.50–2.0)
Chloroformi .....f℥ ss (20.0)
M.
Sig. Rub on the scalp gently with a pledget of absorbent cotton every day or every other day.

If this excites considerable irritation, as it may do, it should be omitted until the irritation subsides.

The following lotion suggested by Erasmus Wilson is regarded by Jamison as extremely useful:

℞
Liq. ammon. fortior.,
Chloroformi,
Ol. sesami .....āā f℥ss (16.0)
Ol. limoni .....f℥ss (1.90)
Spt. rosamarini .....q. s. ad f℥ iv (120)
M.

This should be gently rubbed in once or twice a day.

The author has frequently employed betanapthol with much satisfaction in an ointment containing from 10 to 15 per cent., occasionally combined with pilocarpin, as in the following:

℞
Betanaphthol. .....℥ i (4.0)
Pilocarpin. muriat. .....gr. i (0.65)
Eucerin. .....℥ i (3.20)
M.
Sig. Rub in thoroughly every night.

When used in the bearded region applications like the foregoing should be reduced in strength at least one-half, otherwise a too severe reaction is likely to be produced.

The high-frequency and static currents are recommended by Stelwagon as useful, making the applications long enough to produce considerable reaction. The faradic brush may also be used with excellent effect, each sitting being long enough to produce a well-marked hyperæmia. In recent years Finsen, Jersild, Sack, Kromayer, Jackson, and others, have used phototherapy with favorable results in many cases. The most useful form of light is that produced by the iron electrode lamp. Exposures of from ten to thirty minutes are given daily until there is a decided reaction, when the treatment should be suspended until the reaction subsides. Jackson, who used the Piffard lamp, thought this method of treatment superior to all others.

FOLLICULITIS DECALVANS

Synonyms.—Alopécie innominée (Besnier); Acné decalvante (Lailler); Lupoid sycosis; Ulerythema sycosiforme (Unna); Alopecia orbicularis (Neumann); Alopecia cicatrisata (Crocker).

Definition.—A chronic inflammatory disease of the hair-follicles, chiefly of the scalp, characterized by permanent loss of hair in patches with atrophy and scarring of the scalp.

Symptoms.—The first symptom to attract the patient's attention is usually one or more small patches of baldness in and about the borders of which are scattered pin-head-sized pustules and small red points in which are hairs. These patches spread slowly and new ones appear, either in the neighborhood of the old ones or at some distance from them, so that in course of time considerable irregularly shaped areas more or less devoid of hair are formed. The baldness is seldom complete, however, but here and there are small tufts of hair situated in apparently normal scalp and single hairs twisted and bent. The bare scalp usually shows some atrophy and scarring with here and there small spines of horny epidermis filling the follicles. There is usually some itching which may be at times quite annoying. The course of the malady is a slowly progressive one; and in the advanced stages the pustules and other signs of inflammation of the follicles may entirely disappear. Although seen for the most part in the scalp, a similar affection may also occur in the beard (lupoid sycosis, q. v.) or in other hairy regions, such as the axillæ and the pubic region.

The affection described by Crocker under the name of alopecia cicatrisata (the alopecia orbicularis earlier described by Neumann, the pseudopélade of Brocq) differs from the foregoing malady chiefly by the absence of well-defined inflammatory symptoms. There are no pustules and only occasionally a slight redness around the hairs which, although they show no signs of disease, are readily extracted. There are usually a number of quite small bald patches which, as they increase in numbers and size, form large hairless areas in which the scalp is atrophied, depressed and smooth. Exceptionally after some time pustules may appear just as in the epilating folliculitis described by Quinquaud, and from which it is then quite indistinguishable. Indeed, it is altogether likely that both these diseases represent variants of the same affection. Brocq would include all the members of the group under the name atrophying alopecia (alopécie atrophiante), recognizing three forms, viz., pseudopélade; folliculitis decalvans, and lupoid sycosis.

Etiology and Pathology.—The cause is as yet undetermined, although, reasoning by analogy, there is but little doubt that it is a follicular infection. Although it has been seen in infancy (Brocq) it is for the most part a disease of adult life, most common between the ages of twenty and forty-five. It is much more frequent in men than in women, but one of the most marked cases ever under the author's observation occurred in a woman, beginning at the age of fifty.

Quinquaud found a collection of young cells in the derma situated about the hair-follicles and, to a less degree, about the sebaceous glands. Later atrophic changes appeared followed by disappearance of the follicles and glands. In addition to the streptococcus he also found a micrococcus, cultures of which when rubbed into rats, rabbits and man produced a folliculitis with loss of hair, but other investigators have not been able to confirm these findings. In the non-inflammatory form, pseudopélade, Brocq found an enormous dilatation of the capillaries of the subpapillary and perifollicular network and a cellular exudate composed chiefly of lymphocytes, but also containing plasma cells, "mastzellen," eosinophiles and many large cells containing granular pigment. The sebaceous glands underwent atrophy and disappeared completely.

Diagnosis.—The various forms of the affection are to be distinguished from alopecia areata, from lupus erythematosus and from favus. From the first they all differ by the presence of atrophy and scarring, symptoms which are never present in uncomplicated alopecia areata. Erythematous lupus is seldom confined to the scalp but usually presents patches with characteristic distribution on the face and ears. They differ from favus which they may at times resemble closely, especially when the latter is about terminating, by the absence of the characteristic yellow crusts in which the Achorion may be readily demonstrated microscopically.

Prognosis.—The prognosis as to the restoration of the hair is altogether unfavorable; the follicles have been destroyed and a regrowth of hair is impossible. The duration of all the forms is usually prolonged and they are but little amenable to treatment.

Treatment.—Brocq advises extraction of the loose hairs, although not convinced of its necessity, and the use of the following lotion:

℞

Acid. acetic. glacial.	♏ lxxv (5.0)
Hydrarg. bichlorid.	gr. vijss (0.50)
Glycerin.	f℥ vi (25.0)
Alcoholis	f℥ ijss (75.0)
Aq. destil.	f℥ v (150.0)

M.

This should be rubbed in daily unless it produces irritation, and followed by an ointment of yellow oxide of mercury, 15 to 30 grains (1.0 to 2.0) to the ounce (32.0) of vaseline. He also recommends sulphur ointment, 10 per cent., or the following:

℞

Sulphur. præcip.	gr. xxx (2.0)
Tr. cantharidis	f℥ vi (25.0)
Bals. Peruvian.	♏ x (0.75)
Medul. bovis	℥ijss (80.0)
Ol. ricin.	f℥ i (5.0)

M.

The author has had favorable results from the daily application of an ointment of ammoniated mercury, 40 to 60 grains (3.0 to 4.0) to

the ounce (32.0), using eucerin as a base. Crocker advised an ointment of biniodide of mercury two grains (0.13) to the ounce (32.0), or one containing 20 grains each (1.30) of sulphur and resorcin to the ounce (32.0). Jackson apparently checked the progress of the affection by the daily application of the following, containing colloidal sulphur:

℞

Acid. salicylic. .....gr. xv (1.0)
Sulphur. colloidal. .....ʒ i (4.0)
Adipis lanæ,
Adipis anserini .....partes aequales ʒ i (32.0)
Ol. geranii .....♏ viij

M.

CANITIES

Synonyms.—Gray hair; Hoariness; Trichonosis discolor; Poliosis; Poliothrix.

Definition.—Absence of pigment in the hair.

Symptoms.—Absence of pigment in the hair may exist as a congenital defect, or what is far more common, it occurs as a physiological process, which usually begins about the fortieth or fiftieth year, but often at an earlier period. It may exist in circumscribed regions or may affect the greater part or the whole of the hairy system.

In the congenital form (canities congenita) which is uncommon, it may occur as circumscribed patches situated most frequently upon the scalp, but also at times upon other parts, such as the beard or the brows. Such patches are not infrequently hereditary and may be seen in several members of the same family and in successive generations, occupying the same region. Rizzoli and Stricker (quoted by Sack in Mracek's Handbuch) record the occurrence of a white lock of hair in six successive generations and Seligsohn observed it in four sisters. Observations of a similar kind have been made by Godlee and others. Congenital absence of pigment may also affect the entire hairy system as one of the phenomena of albinism and is then associated with other pigmentary defects, such as absence of pigment in the skin and choroid. The hair in such cases is yellowish-white, differing from the silvery-white usually characteristic of the canities of old age.

Acquired grayness of the hair is usually a physiological process appearing about the fourth or fifth decennium (canities senilis), but its occurrence at a much earlier period, at twenty to twenty-five years of age or even earlier (canities prematura) is not at all uncommon. The change in color usually first appears upon the temples (hence the name of this region) and spreads slowly to other parts of the scalp. In the beard, which usually becomes gray later than the scalp, although there are numerous exceptions, it begins upon the chin and affects the mustache last. In the great majority of cases the graying of the hair takes place slowly, but it may occur quite suddenly. Although it has been denied, chiefly on theoretical grounds, that sudden blanching of the hair may occur there are too many well-authenticated instances on record to doubt it, but it is also true that many of the published

cases are to be accepted with considerable hesitation. Landois observed an instance in which the hair turned gray over night in a man suffering from delirium tremens; Brown-Sequard noted in his own person that a few hairs became white daily, often in their whole length; and Raymond saw a case in which, during a severe attack of neuralgia the hair turned from black to red in the course of five hours, and in the following two days became white and fell out. Other instances in which the hair became white in the course of some days or weeks have been placed on record by reliable and competent observers.

When once begun the loss of pigment usually slowly continues until it involves the entire scalp, the beard and finally the axillary and pubic hair. Not very infrequently, however, certain regions, such as the brows, for example, may retain their pigment long after the scalp and beard have become perfectly white. As a rule the pigment first disappears at the roots of the hair, but exceptionally the distal end is the part first affected. With rare exceptions the depigmentation is permanent, but in rare instances the hair has been known to resume its original color. A remarkable example has been recorded by Jackson, to whom it was communicated by Warner, in which the hair of the scalp and beard changed from black to white and to black again three

Fig. 232.—Ringed hair.

times in thirty years. Richelot (quoted by Unna) observed that the brown hair of a girl of seventeen turned white while she suffered from chlorosis, but later was restored to its normal color.

As ringed hair (Fig. 232) (Pili annulati; Fr., Canitie annelée; Ger., Ringelhaare) a very rare and peculiar form of graying of the hair has been described, in which short sections of the hair-shaft are alternately pigmented or white, giving the hair a ringed or banded appearance. First described by Karsch, in 1846, other cases have been reported by Simon, Spiess, Landois, Pincus, Brayton, Crocker, and a few others. With but very few exceptions the hair showed no other alteration, but in one instance the pigmentary change was associated with trichorrhexis nodosa (Crocker), and in another with monilethrix (Lesser). The majority of the cases reported were observed in children, and with the exception of the case observed by Crocker in which the mustache was affected, it was confined to the scalp.

Etiology and Pathology.—The most important etiological factors in the production of gray hair are age and heredity. Reference has already been made to the hereditary character of the patchy grayness and the absence of pigment in the hair which accompanies albinism; and the fact that the members of certain families become gray early is a matter of common observation. The effect of prolonged mental

effort and other mental stress such as worry, fear, shock in the production of gray hair has long been known and generally admitted. Premature grayness may follow severe acute illnesses, such as the infectious fevers, or chronic affections of various kinds. Local injuries to the scalp may be followed by patches of gray hair, or less frequently, the whole region may be affected. Patches of white hair may be a symptom of vitiligo, the scalp at the same time being depigmented; they also occur in the early stages of recovery in alopecia areata, the new hair frequently remaining for some time without pigment. Senile grayness is to be regarded as a physiological rather than a pathological process, and is the result of alterations in the trophic processes concerned in the growth of the hair about the details of which we know little or nothing.

The white color of the hair may be due to disappearance of the pigment, to accumulations of minute air-bubbles in the cortex, or to the simultaneous occurrence of both these. When it is the result of the disappearance of the pigment it is yellowish-white, and when air is present in the shaft it is silvery-white, as in most cases of senile canities.

The manner in which the pigment disappears still lacks an altogether satisfactory explanation. Ehrmann attributes the loss of pigment to the failure of certain pigment-bearing cells (melanoblasts) to convey pigment from the papillæ to the hair cells, although pigment may be still present in the former. Metchnikoff explains the loss of the pigment by the phagocytic action of certain branched cells of the medulla which absorb pigment from the cortex. In cases of sudden whitening of the hair the change in color is probably due to accumulation of air between the cells of the cortex which obscures the pigment and which is still present to some degree. Wilson attributed the occurrence of the white section in ringed hairs to accumulations of gas in the hair which developed during the night or on alternate days; this is, however, pure speculation lacking confirmation.

Prognosis and Treatment.—The prognosis is most unfavorable—hair which has become white remains so for the remainder of the patient's life; the cases in which there has been a restoration of the normal color are to be regarded as clinical curiosities. In the senile form loss of the pigment usually slowly increases and extends until all the hair is affected; very exceptionally its progress is arrested before all the hair is involved.

In those cases in which the loss of pigment is attributable to some general affection which lowers the patient's vitality, to mental stress or other debilitating influence, hygienic measures, and abundance of highly nutritious food and general tonics, such as iron, arsenic, strychnia, should be employed. The only method by which the color can be restored is the use of some one of the many hair-dyes to be found in the shops, but the use of these is not advisable.

Discoloration of the Hair.—Changes in the color of the hair may follow diseases of various kinds, or may result from purely external

causes; both are rare. Alibert, quoted by Rayer, twice observed a change in the color of the hair following a severe illness; in one instance the blonde hair of a young woman which had fallen out after an illness was replaced by black hair; in another, brown hair was succeeded by red. Beigel has reported a case in which blonde hair was replaced by black after an attack of typhus. Reinhard records the case of an idiot boy with epilepsy in whom a change in the color of the hair from a reddish blonde to yellow occurred during violent fits of temper, the change beginning at the free ends and occupying about two days; after about a week the normal color was restored. Smyly observed a change in the color of the hair from mouse color to yellow in the right temporal region of an infant suffering from suppuration in the left temporal bone. Mayer has reported the case of a boy with blonde hair in whom a band of red hair about two fingers broad, appeared at the occipital border on three separate occasions, the first during convalescence from an illness. In a case reported by Squire there were patches of auburn and brown hair on the side of the head of a youth, sixteen years old, producing a coloration like that of a tortoise-shell cat; the condition was congenital. In the oft-quoted case reported by Prentiss a change of color of the hair from blonde to black followed the hypodermatic administration of pilocarpin for two months. The subject was a young woman suffering from pyelonephritis and suppression of urine: the hair was not only changed in color, but became coarser and grew more vigorously than before.

Discoloration of the hair from external causes is occasionally observed and may be an occupational affection. Green hair has been observed in workers in copper; blue in those who work in cobalt mines and in indigo; brown, in those who handle anilin. Discoloration of the hair from various medicinal agents, such as chrysarobin and resorcin, are not very uncommon. The former produces a brownish-red stain, the latter a dirty yellow in those with white or blonde hair.

Treatment.—The only treatment for discoloration of the hair arising from obscure internal causes is the use of a dye; the treatment of those due to external causes is sufficiently obvious—avoid the cause.

DERMATITIS PAPILLARIS CAPILLITII

Synonyms.—Acne keloid; Folliculitis nuchæ sclerotisans (Ehrmann).

Definition.—A folliculitis situated on the occiput at the margin of the hair characterized by firm, keloid-like nodules. This rare affection was first described by Kaposi in 1869, although it had been recognized by earlier authors, the affection described by Alibert as pian ruboid and by Rayer as sycosis capillitii being in all probability the same disease.

Symptoms.—It is situated almost without exception on the nape of the neck at the border of the hair (Fig. 233), whence it extends upwards into the occipital region. It consists of a variable number of

pin-head to pea-sized, red or pinkish, very firm nodules, which are at first discrete, but later more or less confluent by the crowding together of the lesions, thus forming an elevated, nodular plaque. The hair is lost in large part, although here and there small bunches of ill-formed twisted hairs project between the nodules or from the centre of the nodule itself and are usually quite firmly fixed in the follicle. In the more advanced stages of the malady the surface of the diseased area may become moist, covered with a foul-smelling sero-purulent secretion, and scattered pustules and small abscesses are not uncommonly present. In the final stages there is marked atrophy with sclerosis and more or less complete baldness of the affected area, only a few scattered tufts of deformed hairs projecting from the distorted follicles remaining.

Although in most cases limited to the nape of the neck, it may

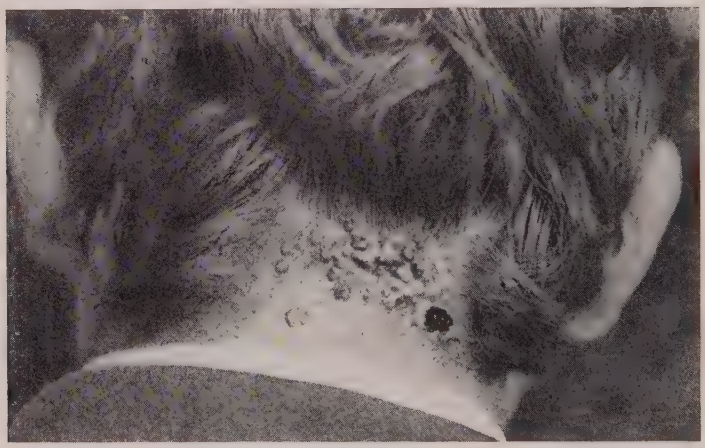


Fig. 233.—Dermatitis papillaris capillitii (acne keloid).

extend some distance upwards over the occiput and cover a considerable area. Occasionally it extends laterally, forming a transverse band across the back of the neck.

According to Ehrmann it begins with the appearance of discrete or grouped pustules situated upon an infiltrated base each penetrated by a hair, the nodules being a later manifestation of the disease.

The subjective symptoms as a rule are insignificant.

Etiology.—The direct cause is unknown. Sabouraud believes it the result of invasion of the hair-follicles by the microbacillus of seborrhœa. Ehrmann thinks it is caused by the staphylococcus aureus and albus, its special clinical and histological features being due to the unusual depth of the follicles and the mode of their arrangement in the affected region.

Pathology.—The view of Bazin and some later observers that the malady is simply a combination of acne and keloid, seems scarcely ten-

able in view of the fact that its subjects show no special predisposition to keloidal growths elsewhere. There is apparently but little doubt that it is a follicular infection, although there are differences of opinion as to the nature of the infecting agent.

In the early stages the histology is that of a folliculitis and perifolliculitis which in the beginning at least affects the upper part of the follicle. In and around the follicles there is an exudation of lymphocytes, polymorphonuclear leucocytes, some plasma cells and numerous

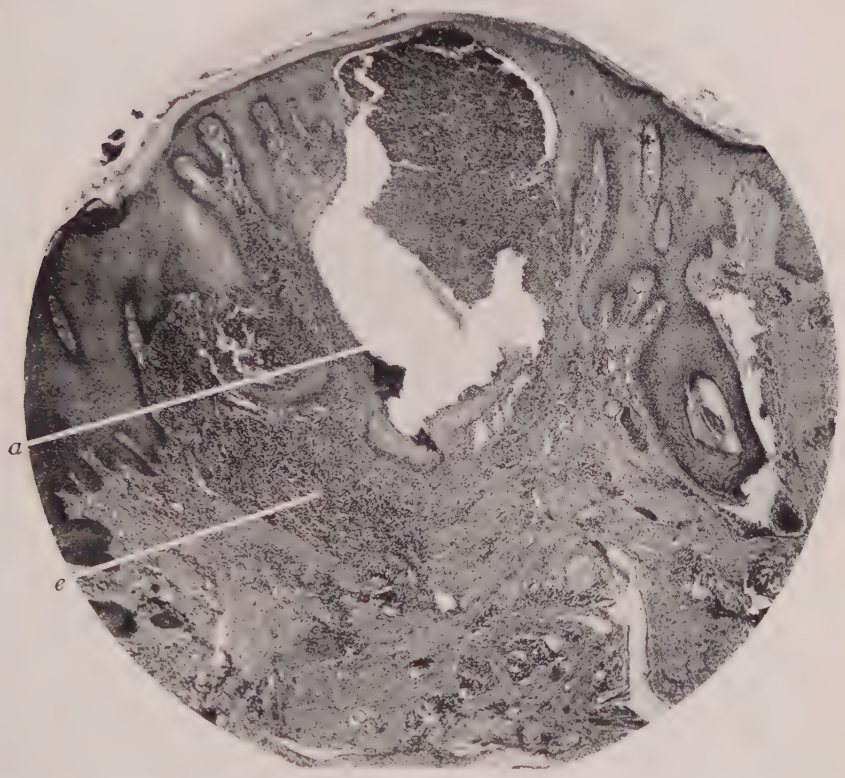


FIG. 234.—Dermatitis papillaris capillitii. Section from case shown in Fig. 233. *A*, Follicular abscesses; *E*, exudate containing a considerable number of plasma cells and some lymphoid cells about follicles.

"mastzellen" (Fig. 234). Ledermann, Ehrmann, and some others have observed giant cells in the exudate. The collaginous tissue is increased and the elastin has disappeared. In advanced stages of the disease there is complete atrophy of the follicles and sebaceous glands.

According to Unna, neither staphylococci nor the *bacillus acnes* is present in the folliculitis with which the affection begins, and he therefore believes that the disease is a special one—neither acne nor keloid.

Diagnosis.—The clinical features of the malady are so charactristic that the diagnosis rarely presents any difficulty. In its earliest stage it may be mistaken for ordinary acne, but the presence of small solid

keloidal elevations, which appear quite early in the disease, serves to distinguish it from that affection.

Prognosis.—The disease is an extremely chronic one, lasting for years and slowly extending in area; less frequently it becomes stationary after a time.

Treatment.—Ointments of sulphur and ichthyol in moderate strength are perhaps the best applications, and in mild and early cases may suffice to bring about a cure. When the disease has lasted for some time and there is much sclerosis, more vigorous methods of treatment must be employed. Linear scarification, curettage, and excision have all been advised. Abscesses when present should be thoroughly evacuated after incision and the cavities cleansed frequently with hot boric acid solution. According to Ehrmann the removal of the hairs from the affected area by electrolysis is an absolutely certain method of treatment.

The Röntgen ray has been employed with satisfactory results in a few cases.

SYCOSIS VULGARIS

Synonyms.—Non-parasitic sycosis; Coccogenic sycosis; Folliculitis barbæ; Fr., Sycosis non-parasitaire; Ger., Bartfinne.

Definition.—A chronic inflammation of the hair follicles principally of the beard, characterized by an eruption of papules, pustules and nodules, each of which is perforated by a hair.

Symptoms.—The disease (Plate XXXVII) usually begins with a few small discrete papules and pustules situated most commonly upon the chin, cheek or upper lip and new lesions continue to appear, usually in crops at irregular intervals, until a patch of variable size is formed. In time the entire upper lip, the greater portion of the cheek, or even the entire bearded region may be covered by the eruption. In extensive cases which have lasted for some time there is usually more or less thickening and crusting of the affected region, especially when the upper lip is the part involved. In rare cases when the crusts have been allowed to accumulate the surface beneath is red, papillomatous or vegetating, and covered with seropurulent discharge (Lang, Neumann). Upon the upper lip, to which the disease is often limited, the portion immediately beneath the nostrils is usually first affected whence it spreads to other parts of the lip, or what is not at all infrequent, it may remain limited to the central portion, forming a flat, sometimes tumor-like elevation covered with pustules and crusts. As a rule the hairs are firmly retained in the follicles and attempts at extraction are quite painful; exceptionally when the disease has lasted for a considerable period and the inflammation has been deep-seated the follicles may be completely destroyed with loss of hair and more or less scarring (Fig. 235). The subjective symptoms vary from moderate itching and occasional slight burning to severe itching or burning, or less frequently pain. Although limited in the vast majority of

PLATE XXXVII

Sycosis vulgaris.

cases to the bearded region a similar affection may occur in other hairy regions, such as the eyebrows, axillæ and the pubic region.

The duration of the disease is quite indefinite. It usually lasts for months and even years unless terminated by treatment. Spontaneous recovery is a rare occurrence.

Some years ago Milton described a variety of folliculitis of the beard in which the hair follicles were completely destroyed and extensive scarring followed, to which he gave the name lupoid sycosis (Fig. 236); more recently Unna has proposed the name ulerythema sycosi-

Fig. 235.—Sycosis vulgaris. Many years' duration with scarring.

forme for it. The eruption, beginning as in the ordinary form with small papules and pustules spreads from the place of its beginning centrifugally, producing a smooth atrophic patch with red and slightly elevated borders, from which the hairs have completely disappeared. According to Unna it does not begin like the ordinary form, with papules and pustules, but with erythematous spots upon which vesicles appear. It is situated much more frequently upon the cheeks than elsewhere in the beard, and is often limited to this region. It is extremely chronic, lasting in most cases for many years with occasional periods of remission of variable length.

Etiology.—The researches of Bockhardt, Unna, Sabouraud, and

others have apparently demonstrated quite conclusively that the primary cause of sycosis is the Staphylococcus pyogenes, most frequently the aureus, although the citreus and albus are likewise found in the pustules. It would seem, however, that other organisms may also occasionally produce a similar inflammation of the hair-follicle. Tommasoli has reported, under the name sycosis bacillogenes, a case of sycosis in which he found a bacillus which was proven to be the active cause by cultures and inoculations in the rabbit and his own skin.

Among predisposing causes are inflammations of the bearded region

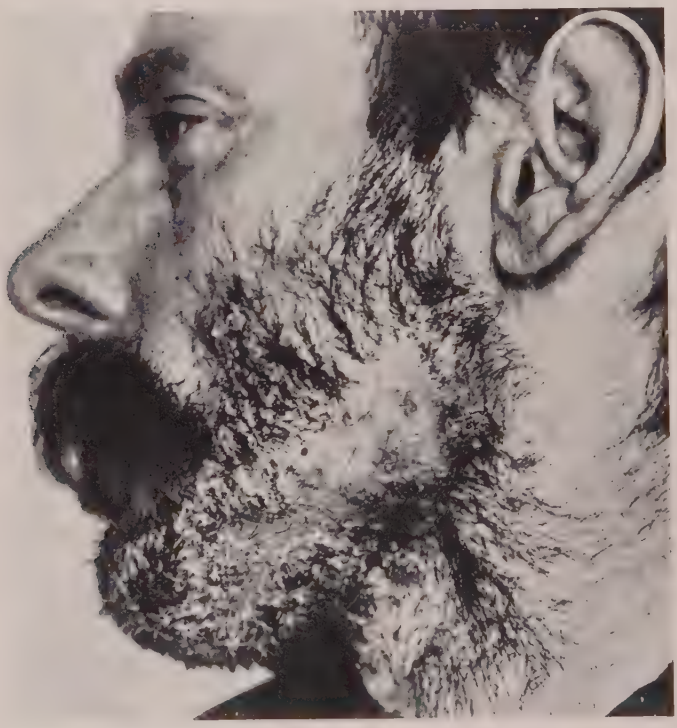


Fig. 236.—Lupoid sycosis.

of various origin, either such as may result from local irritation, as from shaving or from disease such as eczema, or seborrhœic dermatitis. In sycosis of the upper lip there is quite commonly a nasal discharge which leads to secondary infection of the follicles of the mustache, a fact of great importance in connection with treatment of the disease in this region.

Pathology.—Sycosis is a folliculitis and perifolliculitis in which, according to Unna, four stages may be distinguished histologically. The first stage is represented by a small pustule in the neck of the hair follicle situated between the horny layer and the rete mucosum; in the second stage there is a nodular perifolliculitis in the neck of the follicle

and in the third a perifollicular abscess; from all of these there may be complete recovery. In the fourth stage there is total suppuration of the follicle followed by its complete destruction, loss of hair and scarring. The walls of the follicle are infiltrated with numerous leucocytes and contain great numbers of streptococci.

In lupoid sycosis (ulerythema sycosiforme) Sack, working in Unna's laboratory, found extensive collections of plasma cells about the follicles with complete disappearance of the elastic and rarefaction of the collagenous tissues. There was also atrophy of the follicles, sebaceous- and sweat-glands and muscles of the skin. The papillary body contained large multinucleated chorio-plaques and numerous "mastzellen."

Diagnosis.—Sycosis may be mistaken for pustular eczema of the beard and for parasitic sycosis, trichophytosis (ringworm) of the beard. In eczema the inflammation is rarely confined to the bearded region alone, but spreads beyond it and is frequently present on other parts of the face, such as the forehead or upon some part of the trunk or extremities. The inflammation is not limited to the follicles as in sycosis, but is diffuse and is accompanied by oozing and abundant crusting with itching, frequently very pronounced.

Parasitic sycosis or ringworm of the beard usually begins much more acutely than the non-parasitic variety and is usually much more inflammatory. Sycosis vulgaris frequently attacks the upper lip; the parasitic variety only very rarely does so. In the latter the inflamed area is often nodular or "lumpy" and elevations the size of a large pea or hazel-nut occur in which the hairs are quite loose, so that they may be readily and painlessly extracted, or fall out spontaneously. Examination of these loose hairs reveals the presence of the trichophyton.

Treatment.—It is extremely doubtful whether the course of sycosis is influenced to any appreciable degree by internal remedies. If, however, the patient's general health is impaired in any way it is well to employ such internal measures as will tend to repair it so that his powers of resistance may be increased. If his nutrition is below the normal cod-liver oil, moderate doses of arsenic, with some easily assimilable form of iron if anæmia is present, may be found useful. The sulphide of calcium or calx sulphurata which has been advised for its supposed favorable effect upon suppuration is probably without effect; certainly I have never seen it do any good.

When the inflammation is severe with much pain and burning and frequent crops of pustules, mild lotions such as a saturated solution of boric acid, or black wash, lotio nigra, applied three or four times a day, will usually afford much relief, the beard first being closely clipped and crusts, if present, removed by washing with hot water, or the liberal application of some bland fat, such as vaseline, olive oil, or cold cream. In the severest cases with swelling and pain, much relief may be obtained by the use of a starch poultice made with a

saturated solution of boric acid; this serves not only as a soothing application, but softens the crusts and facilitates their removal. Frequent shaving, every day, or at least every other day, should be insisted upon, as this is a most valuable auxiliary to the local treatment. Depilation is advised by most authors, and is without doubt a valuable procedure, but done in the ordinary way with forceps it is frequently so painful that the patient will not do it or permit it to be done. Depilation by the X-ray, however, is frequently followed by brilliant results; with the falling of the hair the disease may completely disappear, leaving the skin quite smooth. Unfortunately the eruption is likely to return with the hair, although occasionally the cure is permanent. The exposures should be controlled by the Sabouraud-Noiré pastile or Holzknecht meter, and should be just sufficient to produce fall of the hair without dermatitis; if this dose is exceeded permanent loss of hair may result.

In the ordinary case with moderate inflammation which has lasted for some time one of the most useful local remedies is sulphur, used as an ointment or soft paste, in the strength of from twenty to forty grains (1.30 to 2.60) to the ounce (32.0); this may be applied once or twice a day with gentle friction. An ointment of ammoniated mercury, twenty to thirty grains (1.30 to 2.0) to the ounce of cold cream, or cold cream and lanolin is often of much service, and is little inferior, if at all, to sulphur.

A very valuable remedy, although a rather disagreeable one on account of its odor and color, is ichthyol. This may be used either as an aqueous solution, 20 to 40 per cent., best applied with a brush, or as an ointment containing 10 to 20 per cent. Occasionally it may be combined with sulphur; a compound ointment of ichthyol, one to two drachms (4.0 to 8.0), and sulphur, one-half a drachm (2.0), does better than either one alone.

In obstinate cases injections of a vaccine made from the patient's own lesions may be tried; these are occasionally followed by brilliant results, the eruption rapidly disappearing, but unfortunately quite as often they are without effect.

DISEASES OF THE SEBACEOUS GLANDS

ASTEATOSIS

Synonym.—Asteatodes.

Definition.—A deficiency of fatty material in the skin.

Symptoms.—The skin is abnormally dry, inclined to superficial fissuring, and is frequently finely desquamating. The deficiency of fat is to be regarded as a symptom rather than as an independent affection; it is frequently an accompaniment of other affections, such as ichthyosis, prurigo, pityriasis rubra pilaris, extensive psoriasis. It is frequently present in old age and in wasting diseases as a part of

the general failure of nutrition. As a local condition limited to certain regions, such as the hands and forearms, it is fairly common in those whose occupation necessitates frequent and prolonged contact with substances which remove the fatty material from the skin; it frequently occurs in washerwomen, whose hands and arms are immersed for hours at a time in strongly soapy water, and in workers in certain trades in which alcohol, ammonia, or other alkalis are used.

Treatment.—The treatment is altogether symptomatic and consists in the local use of such bland fats as vaseline, lanoline, oil of sweet almond, or oil of sesame, either alone or in various combinations. In the regional form contact with fat-dissolving substances should be avoided when possible.

SEBORRHŒA

Synonyms.—Stearrhœa; Steatorrhœa; Acne sebacea; Fr., Seborrhée; Ger., Schmeerflus.

Definition.—A disease of the fat-excreting glands of the skin characterized by oiliness of the skin with or without the formation of fatty crusts.

The present conception of seborrhœa differs in a number of important particulars from Hebra's definition, which was almost universally accepted for many years, the change being almost entirely due to the indefatigable labors and numerous writings of Unna and Sabouraud. Many of the most recent authors recognize but one form of seborrhœa, viz., the oily form, the seborrhœa oleosa of Hebra, rejecting that author's seborrhœa sicca altogether as belonging in another category.

As there is still considerable difference of opinion and uncertainty as to the place of some of the forms of the latter, and as the author is not yet fully convinced that some of them at least are not seborrhœic, two forms are still recognized here for purposes of description, although it is admitted that the pityriasis simplex of many authors, which Hebra included among the dry forms of seborrhœa, is quite certainly not seborrhœa.

Seborrhœa Oleosa.—Fluxus sebaceus; Acne sebacée huileuse (Besnier); Hyperidrosis oleosa (Unna); Hyperidrose huileuse (Brocq).

Symptoms.—This form of seborrhœa, which for a considerable number of the most recent writers is the only true seborrhœa, is distinguished by a more or less marked greasiness of the skin. It exhibits a very decided predilection for those regions in which the sebaceous glands are most numerous and active, such as the scalp, the forehead, the nose and cheeks, the sternum and the interscapular region. Much less commonly the entire cutaneous surface is abnormally greasy.

Upon the scalp, which is one of the regions most frequently affected, it varies from slight greasiness of the hair to extreme oiliness.

In the most marked cases the hair is shining, and when long, as in women, sticks together in greasy locks, looking as if oil had been freely applied to it.

When the face is affected the forehead and nose are oily and shining, and frequently grimy, owing to the readiness with which floating dust and dirt adhere to the greasy skin. The mouths of the ducts of the sebaceous glands are more or less dilated, giving an appearance of coarseness to the skin, and from the dilated ducts slender filaments of sebaceous material can be readily expressed, the "seborrhœic filaments" of Sabouraud, which this author regards as an essential and characteristic feature of the malady. In many instances comedones and papules and pustules of acne are likewise present in varying numbers.

Seborrhœa sicca; Pityriasis simplex; Pityriasis steatodes; Eczema seborrhœicum (Unna).

The so-called dry form of seborrhœa attains its most characteristic development upon the scalp, to which region it is for the most part confined. It is characterized by yellowish or grayish, friable or soft greasy crusts, which glue the hair down to the scalp. Although adherent, they may be readily removed and the scalp beneath is found to be either normal in appearance or of a pale leaden color; occasionally there is some hyperæmia.

Occasionally there is an abnormal production and accumulation of sebaceous material (smegma) beneath the prepuce in men and about the clitoris in women, which may undergo decomposition and give rise to balanitis in the former and vulvitis in the latter.

What may be regarded as a physiological seborrhœa exists to a greater or less degree during the last months of intrauterine life and in the new-born infant as the *vernix caseosa*. This quite commonly persists for two or three months after birth upon the scalp as a yellowish or greenish, quite adherent crust. The scalp beneath is often normal in appearance, but may be more or less hyperæmic, or even inflamed, either as the result of decomposition of the fatty material in the crust or from ill-directed efforts to remove it; when inflammation is present, it cannot properly be regarded as seborrhœa, but as a seborrhœic dermatitis (eczema seborrhœicum).

Pityriasis simplex, pityriasis furfuracea, commonly known as dandruff, was regarded by Hebra as a form of dry seborrhœa, but there is general agreement among writers of the present day that it is not an affection of the sebaceous glands, but of the epidermis. It is characterized by a more or less abundant dry bran-like scaling, confined for the most part to the scalp, but not at all infrequent in the beard and brows; when at all marked, the patient's coat-collar and shoulders are constantly covered with fine white scales, which sift down from the scalp. The scalp is either normal in appearance or slightly hyperæmic and more or less itching, less frequently burning, are present. Sooner or later the hair becomes dry, lustreless, and

thinned, and baldness (alopecia pityrodes) eventually appears. Occasionally the smooth parts of the face present a similar desquamation, and in those suffering from chronic wasting diseases the entire cutaneous surface may be affected (pityriasis tabescentium).

Etiology.—Seborrhœa is a disease of adolescence and early adult life, beginning commonly about the time of puberty, when the sebaceous glands are undergoing rapid development. It occurs with about the same frequency in both sexes, although it is stated by some authors to be somewhat more frequent in women after middle age; this, however, has not been the author's experience. It is more frequent in those with dark complexions than in blonds. It is frequently associated with that congeries of symptoms included under the somewhat vague term dyspepsia, and in a considerable proportion of cases symptoms of anæmia, chlorosis, or tuberculosis are present. It occasionally follows severe illnesses, such as the exanthemata, especially variola. All these, however, are nothing more than predisposing factors, and any or several of them may be present in those who exhibit no symptoms of seborrhœa. The present tendency is to regard it as primarily due to some one of the microörganisms present in the gland-ducts and the crusts.

According to Sabouraud, the cause is a microbacillus present in enormous numbers in the seborrhœic filament, which can be expressed from the ducts of the sebaceous glands in the affected regions.

Pathology.—Largely as the result of the extensive studies of Unna and Sabouraud, to which reference has already been made, many authorities of the present day regard the infectious nature of the malady as proven. As just observed, Sabouraud believes the infecting agent in the oily variety to be his microbacillus.

The form characterized by fatty crusts is believed by this author to be a secondary infection by a polymorphous coccus forming gray cultures, probably identical with Unna's morococcus, engrafted upon a scalp already affected by pityriasis. This last is not a seborrhœa at all, but an epidermic affection due to the organism first described some years ago by Malassez, which is probably the same organism described later by Unna as the bottle-bacillus (Flaschenbacillus).

Unna does not believe the sebaceous glands are the source of the fatty excretion, but the coil-glands, and calls the affection, not seborrhœa, but hyperidrosis oleosa. Beatty's careful observations, however, have confirmed the generally prevalent view that the sebaceous glands are the seat of the disease. They at the same time go far to support Unna's contention that the dry forms are inflammatory and should therefore be considered forms of seborrhœic dermatitis (eczema seborrhœicum).

Diagnosis.—The recognition of the oily form of seborrhœa is usually easy; it cannot readily be mistaken for any other affection. When fatty crusts are present it is to be distinguished from seborrhœic

dermatitis and from psoriasis. It is to be distinguished from the former by the evident dilatation of the ducts of the sebaceous glands from which vermicelli-like filaments can be readily expressed, and the absence of inflammation. It must be admitted, however, that it is sometimes difficult to draw the line between the two affections, as the seborrhœa readily becomes inflammatory and is then no longer a seborrhœa but a seborrhœic dermatitis.

In the author's experience no error is more common than to mistake a dry seborrhœa of the scalp for a psoriasis. A careful examination, however, will always prevent mistakes. The crusts of seborrhœa are fatty or greasy, are diffuse instead of well-circumscribed, and cover a scalp which is normal in appearance or paler than normal. In psoriasis the crusts are dry and friable, circumscribed, and cover areas of scalp which are red and inflamed, and in the great majority of cases there are unmistakable patches on the smooth surfaces, particularly the elbows and knees.

Prognosis.—The prognosis as to a cure is only fairly favorable; improvement is likely to be slow, and relapses are common even with the best-directed treatment. Sabouraud regards it as incurable, although great improvement almost amounting to a cure can be brought about by proper treatment. In the dry varieties baldness (alopecia pityrodes) is an almost invariable sequel unless treatment is undertaken early and continued perseveringly.

Treatment.—If the patient is anæmic or chlorotic, some readily assimilable form of iron should be given either alone or in conjunction with small doses of arsenic. In those showing signs of tuberculosis, such as chronic adenitis, cod-liver oil may be administered in small quantities with an abundance of easily digested and nutritious food, and above all an abundance of fresh air and sunlight should be insisted upon. If there are symptoms of faulty digestion and assimilation, the diet should be carefully regulated and strychnia and hydrochloric acid given. Sabouraud is thoroughly convinced of the usefulness of the stronger sulphur waters taken internally.

However useful such general treatment as is briefly outlined above may be, and there is no doubt that it is at times of use, it will accomplish little or nothing unless employed in conjunction with judicious local treatment.

When the scalp is the seat of the disease, it should be washed at first every five days, or once a week, with warm water and tar soap; or if there is considerable crusting the tincture of green soap may be used instead. After washing, a small quantity of vaseline, or, better, oil of sesame, should be rubbed in. As improvement takes place the intervals between the washings may be lengthened to ten days or two weeks.

The most useful external remedies are, in the order of their efficacy, sulphur, resorcin, tar, and ammoniated mercury, and there is general agreement among dermatologists that the first-named is much the

most efficacious. As a rule, ointments are more effective than washes, although less agreeable to use. The following lotion containing sulphur in suspension is a useful one in the milder cases:

℞
Sulphur. præcip.,
Alcoholis, 90 per cent. .....āā ℥ijss (10.0)
Aq. destil.,
Aq. rosæ .....āā f℥iss (50.0)
M.
Sid. Apply once a day (Sabouraud).

The author has for some time used the following ointment of sulphur with satisfactory results:

℞
Sulphur. præcip. .....gr. x–xx (0.65–1.30)
Eucerin. ....℥i (32.0)
M.
Sig. Apply with friction every night upon retiring.

The preparations of tar are frequently of decided value, but are objectionable on account of their strong unmistakable odor and the staining which follows their use. Sabouraud recommends the following tarry lotion:

℞
Ol. cadini .....f℥iij (100.0)
Decoct. quillaiæ ....f℥i (30.0)
Ovi vitel. No. i,
Aq. destil. .....q. s. ad f℥viij (250.0)
M.

The oil of cade and the quillaia are to be mixed first, the yolk of the egg is to be gradually added in a mortar, stirring all the while, and the water added last. One tablespoonful of this emulsion is to be added to a quart of water and the mixture used as a lotion once or twice a day. Anthrasol, a decolorized and deodorized tarry preparation, may be substituted for the oil of cade, making a more agreeable application, although somewhat less effective, perhaps.

A lotion of resorcin, 2 to 5 per cent., in 70 per cent. alcohol, is a useful application in many cases; it should be gently rubbed in once a day either with the fingers or with a pledget of cotton. Occasionally the stronger lotions excite a considerable degree of inflammatory reaction and should therefore be used at first with some care. Should these lotions prove too drying, a few minims of glycerin, ten to twenty to the ounce (32.0), may be added. Ointments of resorcin are less effective than lotions and much less agreeable. Owing to the staining which it produces, resorcin should not be used on the scalp when the hair is fair or white.

A 4 to 6 per cent. ointment of ammoniated mercury is frequently quite beneficial in seborrhœa of the scalp; it is odorless and colorless, and therefore much more agreeable than the preparations of tar and sulphur.

In seborrhœa of the face and other non-hairy parts, nothing in the author's experience has been found superior to the sulphide of zinc lotion. Beginning with one containing 1 per cent. each of the sulphate of zinc and the sulphate of potash in water with ten to fifteen minims of glycerin to each ounce (32.0) it may be gradually increased to 2 or 3 per cent.

In seborrhœa of the genitalia, frequent ablutions with warm water and castile soap and the application two or three times a day of a saturated solution of boric acid or a lotion containing one-half to one per cent. of resorcin, followed by a dusting powder of equal parts of talc and boric acid, will be found effective. Ointments should not be used in these regions, or if used should always be made up with some one of the mineral fats, as those made with the animal and vegetable fats speedily decompose and irritate.

COMEDO

Synonyms.—Blackhead; Fr., Comedon; Acné ponctuée; Ger., Comedon; Mitesser.

Definition.—An affection of the ducts of the sebaceous glands distinguished by black or brownish dots which represent the outer end of small plugs of sebum and epithelial débris filling the ducts.

Symptoms.—This very common affection is found for the most part on those parts of the skin in which the sebaceous glands are most abundant and best developed, such as the face, the upper portion of the chest and back, the concha of the external ear; exceptionally it occurs upon the abdomen, the shaft of the penis, in fact anywhere where there are sebaceous glands. The small black point which characterizes it may be level with the surrounding skin or slightly elevated, forming small pin-head-sized papules with a black punctate centre (acne punctata, acné ponctuée of the French). Upon the face, which is one of the regions most frequently attacked, they may be present as a few scattered black points, or exist in great numbers, looking like grains of gunpowder imbedded in the skin, often producing decided disfigurement. They vary in size from a mere point to a pin-head or a hemp-seed, the larger lesions occurring upon the nose and the cheeks adjoining. Upon the back and chest they are often numerous and are usually larger than in the face; in these regions, the back especially, they frequently occur in pairs, representing double comedones, which communicate with each other beneath the small bridge of skin which separates them. In the external ear they may reach the size of a small hemp-seed and are frequently bluish in color. By pressing on both sides of the mouth of the duct the comedo may be expressed, and then appears as a yellowish cylinder, the external end of which is quite firm and covered with a black top, while the lower end is soft; these are popularly known as "flesh-worms." Lesions which have existed for some time may be quite

hard, and instead of being uniformly cylindrical may be somewhat pear-shaped, the outer end being slightly smaller than the remainder.

Although comedones may exist independently of any other cutaneous affection, they are in most instances associated with some other disease of the sebaceous glands, particularly with oily seborrhœa and acne, the papules and pustules of the latter frequently arising in the follicles already occupied by comedones.

Usually scattered about irregularly in the regions affected, they may in rare cases occur in symmetrically placed groups, an observation first made by Thin and later confirmed by Crocker, Wetherill, and others. In the cases observed by Crocker there were symmetrical groups of closely crowded lesions on both sides of the face which showed but little tendency to inflammation. In a case seen by the author a few years ago they were confined exclusively to the upper lids, each of which contained a dozen or more. The occurrence of grouped comedones in quite young children and infants has been noted in a few instances by Crocker, Caesar, Colcott Fox, and Harries, the last-named having recently reported four examples. They were usually present in large numbers upon the forehead, the occiput, the cheeks, and occasionally in other regions.

The affection is a very chronic one, many of the lesions lasting with little or no change for years. In rare instances atrophic scars at the mouths of the follicles have been noted as a sequel (Lang, Neumann).

Etiology.—Comedo is most frequently seen in those between the ages of fifteen and thirty, but may, as already noted, occur in childhood, and is not very uncommon in the elderly and old. In children Crocker regarded heat and moisture, and perhaps local irritants, as causal agents; he also observed its simultaneous occurrence in several members of a family, and quotes Haddon as having made a similar observation, suggesting the possibility of its origin from contagion. It frequently occurs in those who are anæmic or chlorotic, or in those who suffer from some form of indigestion with constipation. In women it is often associated with irregularity of the menstrual function or other evidences of disease of the generative apparatus. It also occurs as an occupational disease in workers in tar and paraffin. The author has seen numerous comedones occur upon the bald scalp after inunctions of crude petroleum employed by the patient for the purpose of promoting the growth of the hair. Dore observed them follow inunctions of camphorated oil in a child.

Pathology.—According to the most recent views, comedo is not to be regarded as an independent affection, but simply as a part of certain pathological processes the result of an infection of the follicles, which, beginning with seborrhœa, end with acne. Sabouraud regards it as a degeneration of the "seborrhœic filament," which is always present in seborrhœa. It begins with a hyperkeratosis of the mouth of the follicle, which, interfering with the free escape of the sebum,

leads to its accumulation in the duct, which sooner or later is dilated in consequence. The retention of the sebum is a mechanical effect and not the result of an alteration in its quality, as was formerly believed. The comedo is composed of horny epithelial cells and sebum and contains twisted or rolled-up lanugo hairs, pigment granules, especially in its outer end, and occasionally one or more samples of the *Acarus (demodex) folliculorum* (Fig. 237). In the soft interior are enormous numbers of a very small bacillus, the microbacillus of Sa-

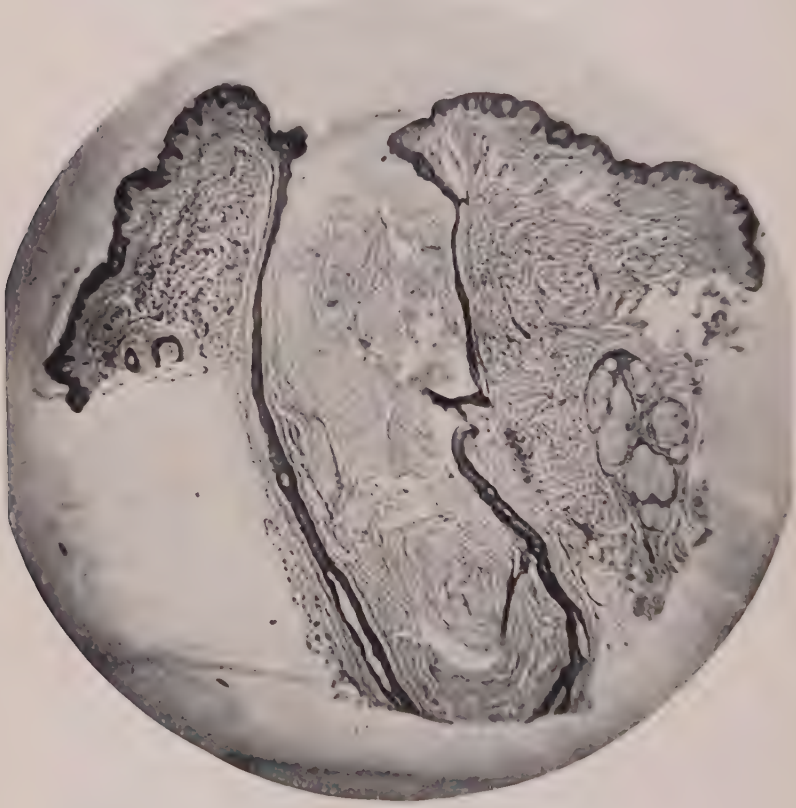


FIG. 237.—Comedo.

bouraud, which that author believes to be the primary etiological factor in its production. Unna has likewise described a small bacillus present in the comedo, which is probably the same organism, which under certain circumstances may be pyogenic and give rise to inflammation and suppuration of the follicle (acne). The bottle-bacillus (*Flaschen-bacillus*) is also to be found in its outer and firmer portion. The black material found in the outer end of the comedo is not, as commonly supposed, extraneous matter, but a pigment which Unna considers is probably a degeneration product of keratin; Sabouraud thinks it likely that it is derived from the cortical cells of the hair.

Diagnosis.—The appearance of the comedo is usually so characteristic that it is readily recognized; the localities which it affects and its frequent association with seborrhœa and acne are likewise more or less characteristic. Occasionally small black dots resembling comedo at a little distance are formed at the mouths of the follicles as the result of a chemical decomposition when mercurial preparations are followed shortly by sulphur, or *vice versa*.

Prognosis and Treatment.—With persevering treatment it is usually possible to remove the affection and prevent its return. The treatment, both general and local, is practically the same as that of acne. In anæmic and chlorotic patients, iron and arsenic should be prescribed; cod-liver oil is frequently of service, particularly in those with thick, oily skins and enlarged glands. In the great majority of cases laxatives, especially the salines, should be given. The diet should be carefully looked after; tea, coffee, and alcoholic beverages, particularly beer and sweet wines, should be forbidden, and plenty of outdoor exercise should be enjoined.

The face should be washed daily for a time with hot water and tincture of green soap, or, if this proves too irritating, castile soap. Two or three times a week the face should be steamed or thoroughly bathed with warm water containing a small quantity of borax, and the comedones gently expressed with the fingers or removed with one of the "comedo extractors" to be obtained of the instrument makers. One of the most useful local applications is the sulphide of zinc lotion, ten to fifteen grains (0.65 to 1.0) each of sulphate of zinc and sulphide of potassium to the ounce (32.0) of water. This should be thoroughly shaken and mopped on every night before retiring. The following lotion of sulphur is especially useful in the cases in which there is oily seborrhœa:

℞
Sulphur. sublimat. 3j (4.0)
Ætheris .....f℥ss (15.0)
Alcoholis .....f℥iijss (90.0)
M.
Sig. Shake thoroughly and apply.

Van Harlingen recommends the following paste for the purpose of loosening the comedones:

℞
Aceti .....f℥ij (7.50)
Glycerini .....f℥iij (12.0)
Kaolini .....℥ss (15.0)
M.

This should be spread over the affected surface at night.

MILIUM

Synonyms.—Grutum; Strophulus albidus: Acne albida; Acne miliaria; Tuberculum sebaceum.

Definition.—Small, yellowish-white, cystic tumors having their origin in the follicles of the lanugo hairs.

Symptoms.—Milium is distinguished by small to large pin-head-sized nodules, which are opaque or faintly translucent, white, yellowish-white, or pale yellow, situated most frequently on some portion of the face. The most common sites are the malar eminences, the lids, often at the inner canthus, the forehead, and the temples; less frequently they are found on the shaft of the penis, the corona glandis, the scrotum, where they may reach the size of a split pea, and the inner surface of the labia in women. When the genitalia are affected they may be the source of some uneasiness to the patient, who is apt to regard them as of venereal origin. They are usually discrete and without any special arrangement, although Crocker saw a case in which they were arranged symmetrically on both cheeks. In most cases they are present in moderate numbers, but occasionally they are quite numerous, and two or more may unite to form a single lesion as large as a pea. If incised a small white globular mass may be expressed with moderate pressure. In a few instances the contents undergo calcareous degeneration, forming cutaneous calculi.

Etiology.—Milia occur at all periods of life from early infancy to old age. Although most frequently seen in young adults, they are quite common in early infancy (*strophulus albidus*), and are occasionally present even at birth. They are sometimes observed to follow pemphigus, dermatitis herpetiformis, and other bullous affections; they may be present in considerable numbers in the regions previously occupied by the bullæ; they also occur in scars of varying origin.

Pathology.—Milia, which are situated in the upper portion of the corium, are horny cysts, the product of a hyperkeratosis of the lanugo hair-follicles, remnants of which Unna invariably found attached to them. They contain small masses of horny epithelium arranged in concentric layers, forming so-called "pearls"; true milia do not contain fat. Virchow, who was the first to study their structure, although recognizing their connection with the hair-follicle, regarded them as retention cysts formed in a small sebaceous gland or in one of the glandular acini. Robinson believes there are two forms, one arising from aberrant embryonic epithelium of the rete, or of a hair-follicle which is without duct, contains no fatty epithelium, and shows no connection with the sebaceous gland; the other contains fatty epithelium and cholesterin and is provided with a duct, a deep-seated comedo. According to Ehrmann, the place of origin of the cyst is probably not the same in all cases, since he has been able in some instances to demonstrate a connection with the excretory duct of the sweat-gland. The discrepancies which exist between the earlier and the more recent accounts of the histopathology of these small cysts is probably due, as Unna suggests, to the failure of the earlier observers to distinguish clinically with accuracy milium from comedo and small sebaceous cysts.

Diagnosis.—When situated upon the lids they may be mistaken for the nodules of xanthoma, but the latter are usually decidedly larger, flat instead of hemispherical, often quite bright or orange-yellow, and when incised do not give exit to the white material found in the former. They differ from comedo, to which they may bear only a very superficial resemblance, by their situation and the absence of the small black dot which usually distinguishes the latter. The so-called colloid milium, colloid degeneration of the skin, which occurs in the same situation, is a very much deeper yellow and contains a gelatinous substance quite unlike the white contents of ordinary milium.

Prognosis and Treatment.—The affection is a trivial one, but when the lesions are numerous they may produce considerable disfigurement. It lasts for an indefinite period, but many of the individual lesions eventually disappear spontaneously, leaving no trace.

In infants, washing with soap and warm water will frequently remove them; in adults, the most satisfactory treatment is electrolysis, by which they may be quickly and easily destroyed. A fine needle connected with the negative pole of the battery should be inserted a short distance into the little tumor and a current of one to two milliampères allowed to act for ten to fifteen seconds. The larger lesions may be incised with a small scalpel and their contents expressed.

STEATOMA

Synonyms.—Atheroma; Sebaceous cyst; Wen; Fr., Steatome, Kyste sebacé, Loupe; Ger., Balggeschwulst, Grützbeutel.

Definition.—A cystic tumor of the skin with soft, cheesy or semi-fluid contents.

Symptoms.—Sebaceous cysts vary in size from a hemp-seed to a walnut or an egg, and exceptionally may be as large as the fist. When small they are round, somewhat flat, and button-like; when large they are hemispherical or less frequently globular. They are usually soft, elastic, and movable; exceptionally they may be rather firm and fixed. They are the color of the skin, pinkish, or, when large and distended, whitish or slightly violaceous. In a certain number a small opening exists, which is at times closed by a small comedo-like plug, from which the cheesy contents may be expressed, or from which a milky, foul-smelling fluid escapes spontaneously from time to time; in many, if not most cases, however, no such opening can be discovered. The most common site is the scalp, where in the early stages they are covered with hair, but with increase in size they become smooth and perfectly bald. They are infrequent upon the trunk and rare upon the extremities; they are occasionally seen upon the scrotum, where they may exist in considerable numbers. They may be single or multiple, and in rare cases are very numerous, scores or even hundreds being present. It is quite likely, however, that most of the

cases of so-called multiple sebaceous cyst were in fact dermoid cysts. They usually grow very slowly, and after reaching the size of a walnut may remain practically stationary for long periods. Occasionally, either from over-distention or from injury, they may become inflamed and suppurate or ulcerate; in rare cases they may undergo epitheliomatous change. At times they may become the seat of cutaneous horns, particularly those which have a patulous duct. They are filled with a whitish, cheesy mass or an extremely fetid semifluid material. Occasionally the contents undergo calcareous degeneration, especially in the tumors of the scrotum, Joseph reporting an instance in which there were forty such calcified tumors in this region.

Etiology and Pathology.—Sebaceous cyst is an affection chiefly of adult life, rarely occurring before puberty. The direct cause is quite unknown.

Virchow regarded the so-called atheroma or sebaceous cyst as a retention cyst of the sebaceous gland, a view which was accepted by the majority of pathologists and dermatologists for a considerable time, but the more recent studies of Franke and Török have apparently proven its incorrectness, at least for a considerable number of such tumors. The latter, in examining a number of atheromata from various parts of the body, found papillæ in all but two, a finding which completely disproves the view that they originate in the sebaceous glands. The contents of most of them were horny cells, cholesterin, and in some instances chalky masses; fat was very seldom present. Török asserts that true atheromata are nothing but dermoid cysts. Winiwarter was of the opinion that there was first a new formation of gland tissue, which was later transformed into a cystic tumor. According to Unna, true sebaceous cysts always have an external opening; those which have fatty contents are never true atheromata. A survey of the literature leads to the conclusion that much of the difference of opinion concerning the histopathology of this tumor is due in large part to the failure to carefully distinguish clinically the sebaceous cyst from other forms of cystic tumor of the skin. Joseph agrees with Franke that under the name atheroma two forms of tumor have been described—one a follicular cyst seated in the cutis, arising in the sebaceous follicle; the other, which Franke calls epidermoid, situated in the subcutaneous tissue, arising from embryonic inclusions of the epidermis.

The wall of the cyst is composed of fibrous connective tissue, and it is lined by squamous epithelium. The contents, which may be cheesy or semifluid, are horny epithelial cells, crystals of cholesterin, fatty *débris,* and occasionally hairs.

Diagnosis.—Its situation in most instances upon the scalp; the absence of hair from the larger ones; the presence of an opening from which whitish cheesy material can be expressed, or from which an extremely offensive fluid escapes spontaneously from time to time, are characteristic features of this form of tumor which readily dis-

PLATE XXXVIII

Acne vulgaris

Acne vulgaris.

tinguish it from other similar tumors. Those which are situated upon the trunk or elsewhere than the scalp are to be distinguished from fatty tumor (lipoma) and from fibroma. From the former they differ by their smoothness, greater elasticity, and absence of lobulation; from the latter by their greater softness.

Prognosis and Treatment.—Steatomata or sebaceous cysts are benign tumors, as a rule unaccompanied by any painful or annoying subjective symptoms; when large or numerous they may produce decided disfigurement. Occasionally, as already noted, they inflame and suppurate; in rare instances they may become the seat of epithelioma.

The treatment is surgical. The overlying skin should be incised and the cyst enucleated. If it is ruptured, or if its wall is adherent to the skin, it should be carefully dissected out, taking care to leave no portion of the wall behind, otherwise a recurrence is likely to take place. Small cysts may sometimes be obliterated by injecting them with tincture of iodine.

ACNE

Under the term "acne" are included a number of chronic inflammatory affections, for the most part pustular, having their seat in the sebaceous glands and follicles, presenting more or less similarity in their clinical symptoms, but varying considerably in their etiology. The several diseases included under this title are: acne vulgaris, acne rosacea, these two being the most closely related of the group; acne varioliformis, acne keratosa, acne urticata, and acne artificialis. The first two of these are far more frequent than the others, and may be regarded as types of this affection. They are closely related to one another in their clinical symptoms, course, and etiology; while the other members of the group are quite distinct etiologically, and probably have little or nothing in common with the first two but their anatomical seat.

ACNE VULGARIS

Synonyms.—Acne simplex; Fr. Acne; Ger., Akne; Finnen.

Definition.—A chronic inflammatory disease of the sebaceous glands characterized by an eruption of papules, pustules, nodules, and occasionally abscesses, having its seat in the regions in which the glands are most abundant and best developed, such as the face and the upper portion of the chest and the back (Plates XXXVIII and XXXIX).

Symptoms.—There is considerable variation both in the number and character of the lesions and in the extent of the eruption.

While the lesions, which may be small and superficial or large and deep-seated, are for the most part pustular, or become so in the course of their evolution, a certain number of them may remain papular or nodular throughout the entire term of their existence. The eruption is usually more or less multiform, being made up of papules and pustules with comedones, and according to the predominance of one or the other form of lesion and the course of the eruption, for conven-

ience of description a number of clinical varieties are recognized, such as *acne punctata, acne pustulosa, acne indurata, acne cachecticorum.* In *acne punctata* the eruption consists of small red papules, frequently not larger than a large pin-head, with a small black dot in the centre. The eruption is usually quite abundant and has its favorite seat on the forehead. *Acne pustulosa* presents two fairly distinct types; one in which the pustules, which are usually numerous, are quite small,

FIG. 238.—Acne vulgaris.

superficial, and only moderately inflammatory, the greater part of the eruption being situated upon the forehead; and a second type in which the lesions are much larger, more inflammatory, occupying not only the forehead, but the cheeks, the chin, the chest, and the back. In *acne indurata* the eruption consists of large, deep-seated red or bluish-red, firm nodules, which often remain without much change for weeks or even a month or two, and then soften and discharge, or undergo slow absorption, leaving well-defined and permanent scars.

In *acne cachecticorum* or scrofulosorum, the lesions are unusually

numerous and large, and extend over the face and trunk. They are usually distinguished by an unusual lividity, and small abscesses are common (Fig. 238). This variety of the malady is seen in tuberculous or strumous subjects with pale, pasty skin, and in those whose nutrition is much below the normal as the result of poor or improper food or debilitating disease.

As a rule the subjective symptoms are trifling, or may be altogether absent. There may be a moderate amount of itching, but rarely enough to give the patient much annoyance, and occasionally some of the larger and more inflammatory lesions are somewhat painful, but this is decidedly the exception.

The number of lesions varies from a dozen or more upon the face or back to hundreds, covering not only the face but the upper chest and back and exceptionally extending in the last-named region to the buttocks. In cases of moderate severity the forehead, cheeks, and the angles of the jaws are the regions most affected. In almost all cases more or less scarring follows the eruption, and in acne indurata the cicatrices are apt to be large and deep, and when numerous may produce quite as much disfigurement as variola. The eruption is apt to appear in crops coming out at irregular intervals, and shows no tendency to any special arrangement, the lesions being scattered about irregularly. In addition to the papules and pustules already described, there are almost invariably evidences of disturbed function of the sebaceous glands, such as comedones, seborrhœa, and small sebaceous cysts.

Etiology.—Among the predisposing causes of acne vulgaris a prominent place must be assigned to youth. The disease almost invariably begins at or about the time of puberty, and in the vast majority of cases occurs in those between the ages of fifteen and twenty-five. Disturbance of the gastro-intestinal tract is a common accompaniment and plays a more or less important rôle in predisposing to the affection. Disease of the generative organs, functional or organic, must also be reckoned among the causes which predispose to it. The relationship to disorders of these organs is especially noticeable in women, in whom a more or less marked menstrual exacerbation is commonly observed.

Unwholesome occupations, improper or insufficient food, and diseases such as tuberculosis, by leading to malnutrition, favor the occurrence of the malady. The mechanical blocking up of the ducts of the glands, which occurs in those whose occupation compels them to work in an atmosphere charged with dust, predisposes to the disease.

The variety known as acne indurata, with large, livid, deep-seated, sluggish lesions, is especially apt to be seen in seamstresses and factory operatives, who, shut away from fresh air and sunlight for hours, work in ill-ventilated and poorly lighted rooms.

As to the direct cause, the weight of evidence is greatly in favor of a specific infection of the sebaceous glands. A number of micro-

organisms have been found in the inflamed glands to which a causative agency has been attributed, but definite proof of their etiological relationship has not yet been satisfactorily furnished. There is much, however, in favor of the view that the organism described by Gilchrist as the *Bacillus acnes,* which is similar to, if not identical with, the microbacillus of Sabouraud, is the causative agent; but there is no doubt that the infection is a mixed one in most cases, the *Staphylococcus albus* and *aureus* taking a considerable part in the production of the inflammation.

Pathology.—According to Unna, the first pathological change in acne is a hyperkeratosis affecting the mouths of the sebaceous gland ducts, which, by interfering with the discharge of the secretion of the gland, leads to the formation of a comedo, a plug composed of horny epithelial cells and sebum. The formation of the comedo is followed in time by inflammation of the sebaceous gland, a folliculitis, and if the inflammatory process extends to the parts about the gland by a perifolliculitis.

According to Leloir and Vidal, the inflammation begins in the perifollicular tissues and later extends to the follicle itself. The degree of inflammation varies considerably; at times it is limited to the gland, at others it extends to the parts around, with the frequent formation of small abscesses (Fig. 239). In acne indurata the cellular exudate about the gland is composed of connective-tissue cells, plasma cells, an increased number of "mastzellen," and an occasional giant-cell. The suppuration which is present is not the result of infection with the staphylococci, according to Unna, but results from a bacillus found in the comedo, and the severity and depth of the suppuration depends upon the situation of these organisms, *i.e.,* whether they are situated in the upper or lower portion of the comedo. In those cases in which the inflammation is severe and deep-seated, complete destruction of the gland or of the entire follicle may take place, with the formation of permanent scars.

Diagnosis.—The diagnosis of acne usually presents no difficulties. The youth of the patient; the inflammatory character of the eruption; its localization upon the face and upper portion of the trunk; evidence of disturbed function of the sebaceous glands, such as comedones and unusual oiliness of the skin; its chronic course; and the usual absence of any notable subjective symptoms, notwithstanding the frequently considerable inflammation present, are features which sufficiently distinguish it from other eruptions. Errors are most likely to occur in confounding it with some one of the acne-like eruptions which frequently follow the internal use of the salts of iodine and bromine, but these are usually distributed over a much more extensive surface, affecting the trunk quite as much as the face, whereas acne vulgaris is often confined to the face alone, and when it exists upon the trunk is almost always limited to the shoulders and upper part of the chest.

Prognosis.—Untreated acne is commonly of long duration, lasting

for many months or several years. While there is frequently, perhaps in most cases, a tendency to spontaneous disappearance as the patient approaches the age of twenty-five or thirty, its continuance after that period is by no means rare. The course and results of the eruption are very materially influenced by the type of lesion present. When these are small and superficial they usually run a comparatively rapid course and disappear without scarring; if, on the

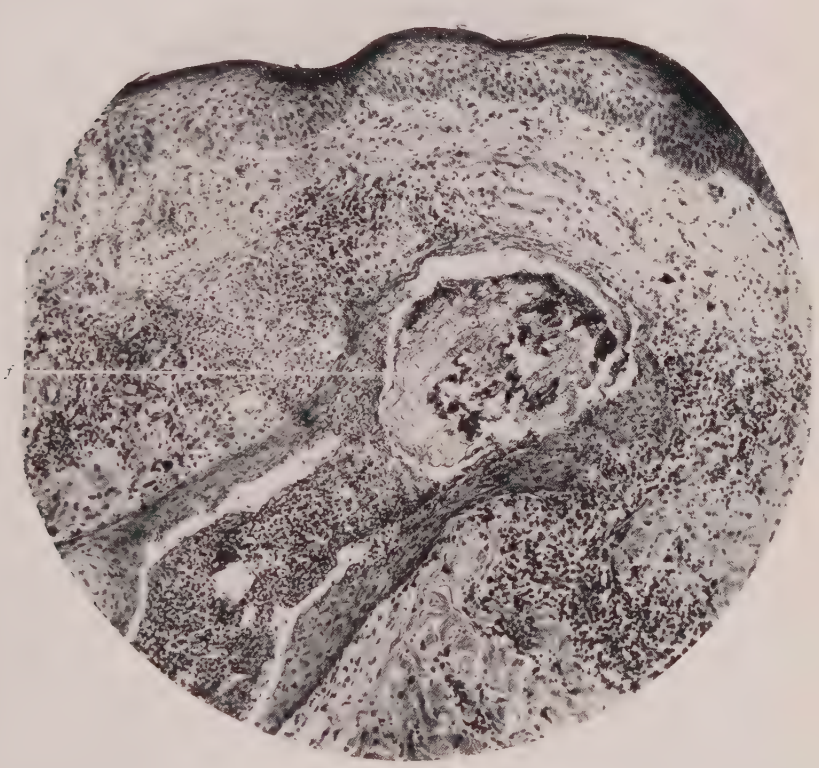


FIG. 239.—Acne vulgaris. Section of a papulo-pustule. Follicle, *f*, is filled with cellular débris and polymorphonuclear leucocytes, while about the follicle there is an abundant exudation of lymphoid, polymorphonuclear and plasma cells.

other hand, they are of the livid, deep-seated type, their course is sluggish, they may last for six to eight weeks, and are followed by deep and permanent scars. In most instances, however, even in the severest cases, ultimate cure may be expected with judicious treatment.

Treatment.—Since in the great majority of cases there is more or less evidence of disturbance of the gastro-intestinal tract, such as flatulence, discomfort after taking food, and constipation, the careful regulation of the patient's diet and the use of laxatives are always

matters of importance in the treatment of acne. Sweets, fried foods, pork, pastry, tea and coffee, sweet wines and beer should be strictly prohibited. Sound ripe fruit, fresh or cooked, should be taken freely.

In anæmic girls and young women the tartrate of iron and potash in moderate doses, or Blaud's pill, should be given either alone or with small doses of arsenic. In those cases in which the lesions are large, livid, deep-seated, and sluggish, occurring in those with thick, grayish skin, cod-liver oil is a remedy of decided value. The calx sulphurata or calcium sulphide, which at one time enjoyed a considerable reputation in the treatment of pustular affections of various kinds, has in the author's hands, as in that of others, proved of no value. In the acne of women, uterine disease or menstrual irregularity should receive appropriate treatment. Among laxatives, the salines are as a rule the most effective. The bitter mineral waters, such as Hunyádi, Appenta, or Friederichschall, may be employed. Phosphate of soda is likewise useful, although it is less efficient than sulphate of magnesia. A slightly laxative mixture which the author has employed for some years with much satisfaction in the treatment of acne is the following:

℞
Sodii hyposulphitis .....ʒss (1.60)
Glycerini,
Aquæ menthæ piperitæ .....āā fʒiij (90.0)
M.
Sig. Two teaspoonfuls t.i.d. in water after meals.

This usually exerts a slightly laxative effect, which may be increased if necessary by the addition of ten or fifteen minims of the fluidextract of cascara to each dose. The compound licorice powder in doses of one or two drachms (4.0–8.0) taken at bedtime is an especially useful laxative in acne. The mistura ferri acida is likewise an efficient, but rather disagreeable, laxative mixture; it is composed as follows:

℞
Magnesii sulphatis .....ʒj (30.0)
Ferri sulphatis .....gr. viij (0.5)
Acidi sulphurici diluti .....fʒjss (6.0)
Aquæ menthæ piperitæ..... q. s. ad ʒviij (250)
M.
Sig. One tablespoonful in a tumblerful of water before breakfast.

In recent years, following the studies of Wright on opsonins, the hypodermatic injections of killed cultures of organisms such as the staphylococcus and the *Bacillus acnes,* found in the lesions of acne, have been employed with varying results. In a certain number of cases the effect has been apparently most satisfactory, and it has been just as disappointing in others. Even in those cases in which its use has been followed by a rapid disappearance of the eruption, relapses have

occurred sooner or later. The use of autogenous rather than stock vaccines is always to be advised; indeed, most authors are agreed that the latter are useless as a rule. With improved technic in their preparation, and with more exact knowledge of the organisms concerned, this will doubtless prove in time an effective method of treatment, but it is yet on trial and can only be regarded as promising.

The local treatment is quite as important as, if not more so than, the internal treatment.

The pustules should be opened with a sterile needle and evacuated by gentle pressure with the thumb and finger; abscesses should be incised with a small bistoury or tenotome and emptied; comedones should be expressed with a little instrument known as a comedo extractor, or with the thumb and finger, first thoroughly bathing the skin with a hot, weak solution of borax or plain hot water. These several little operations should be performed with gentleness, since the violent squeezing of the lesion only increases the inflammation, prolongs its course, and increases the liability to scarring.

In the somewhat exceptional cases in which the inflammation is quite acute and the skin sensitive, the use of mild lotions should precede for a time more stimulating applications. A saturated solution of boric acid in water, mopped on three or four times a day, will often serve a useful purpose under such circumstances; and this may be replaced a little later by a saturated alcoholic solution which often answers admirably in the superficial types of pustular acne.

Sulphur and its compounds easily occupy the first place among local remedies in the treatment of acne of all varieties; it may be used as a lotion or as an ointment, the latter usually being much more effective than the former. The following cream-like mixture, known as Kummerfeld's lotion, is a useful application in many cases:

℞
Sulphur. præcip. .....ʒiv (16.0)
Pulv. camphoræ . . ..gr. x (0.65)
Pulv. tragacanth. .. ..gr. xx (1.30)
Liq. calcis,
Aq. .....āā fʒij (60.0)
M.
Sig. Apply at bedtime.

When there are many comedones with much oily seborrhœa, the following lotion, containing sublimed sulphur, will be found especially useful:

℞
Sulphur, sublimat. .....ʒj (4.0)
Alcoholis .....fʒiijss (108.0)
Ætheris .....fʒss (15.0)
M.
Sig. Shake and apply at bedtime.

The sulphide of zinc lotion, which is essentially a sulphur lotion, may often be employed with good results in pustular acne when the lesions are not very deeply seated.

℞
Zinci sulphat.,
Potas. sulphuret. .....āā ʒj (4.0)
Aquæ .....ℨiv (130.0)
M.
Sig. Apply night and morning.

Should this prove too drying, fifteen or twenty minims of glycerin should be added to each ounce (32.0), or cold cream may be applied after its use. In the sluggish, deep-seated types of the disease the solution of the sulphuret of lime known as Vleminckx's solution is a most effective application, but objectionable on account of the strong odor of sulphureted hydrogen which it gives off. This is to be used as a lotion in the strength of one part to three or six of water, mopping it on twice a day. An ointment containing from thirty to sixty grains (2.0 to 4.0) of precipitated sulphur to the ounce (32.0), the strength depending upon the degree of inflammation and the depth of lesions, is frequently most useful. When stimulation is desired, as in acne indurata, salicylic acid, fifteen to twenty grains (1.0 to 1.50) to the ounce (32.0), may be combined with the sulphur. The following ointment of sulphur and green soap is often productive of marked benefit in the cases in which the lesions are livid in color, deep-seated, and sluggish:

℞
Sulphur. præcipitat.,
Saponis virid. .....āā ʒij (8.0)
Lanolini .....ℨss (15.0)
M.
Sig. Apply at bedtime with friction, and wash off in the morning with hot water.

The salts of mercury, such as the bichloride and ammoniated mercury, are frequently effective local remedies. The bichloride may be used as a lotion in the strength of 1 : 3000 to 1 : 2000, either in water or 70 per cent. alcohol, or as an ointment containing 0.5 to 1 per cent., the latter being reserved for cases with sluggish lesions. Ammoniated mercury, which in the author's hands has often proved extremely useful, may be used as a 10 to 12 per cent. ointment applied once a day.

Resorcin, although not so generally useful as sulphur, is nevertheless often efficacious, and may be used either as an ointment or lotion. The ointment should contain from 10 to 12 per cent., and should be well rubbed in at bedtime. If a more stimulating application seems desirable, it may be used as a lotion containing from 3 to 5 per cent. in 70 per cent. alcohol, which may be applied once or twice a day. Occasionally, owing to unusual susceptibility, resorcin excites a con-

siderable dermatitis, and for this reason it should be used with some care until it has been ascertained that no such unusual susceptibility exists.

In the severer forms with deep-seated pustular lesions, a 2 per cent. solution of salicylic acid in 70 per cent. alcohol often produces admirable results. It should be softly mopped on night and morning, and if it produces more than a moderate amount of scaling it should be followed by the application of cold cream, or, better, equal parts of lanolin and cold cream. When used alone in an ointment it is far less effective, although, as already observed, it is a useful addition to other ointments, such as sulphur ointment.

In extensive, long-standing acne, with numerous large and deep-seated lesions, the use of ointments, pastes, or washes containing beta-naphthol, sulphur, or resorcin in sufficient strength to produce an exfoliating dermatitis is frequently the speediest way to get rid of the eruption. This method of treatment is, of course, to be employed with care, and necessitates the patient remaining indoors for a short time. A 15 to 20 per cent. solution of resorcin in alcohol applied twice a day until desquamation occurs, or Vleminckx's solution one part, water two parts, applied twice a day, until exfoliation occurs, may be employed for this purpose. The following paste:

℞

Betanaphthol 3j–3ij (4.0–8.0)
Sulphur. præcip. .....ℨss (16.0)
Saponis viridi,
Unguent. aq. rosæ .....āā 3ij (8.0)

may be used. This is to be applied to the face spread upon lint, and allowed to remain from twenty minutes to one-half hour, after which it is removed with vaseline or cold cream, the face washed with hot water, and cold cream or other soothing ointment applied. This is repeated every night until exfoliation begins.

The X-ray is an extremely valuable remedy in the treatment of acne, but owing to its destructive effect upon the hair-follicles and to certain untoward results which sometimes follow its use, even in the hands of the most careful and experienced, it should be reserved for the rebellious and more aggravated types of the malady, and should always be used with caution. The exposure should seldom exceed five to seven minutes in duration, given every five days, stopping the treatment upon the appearance of the slightest erythema. The treatment is best carried out with the aid of some one of the various devices employed for the measurement of the ray. The Holzknecht meter and the Sabouraud and Noiré pastille are convenient and reliable instruments for this purpose. Care must of course be taken to protect the brows and scalp. In certain cases a disfiguring atrophy of the skin follows the use of the X-ray even when no decided reaction has been produced.

ACNE ROSACEA

Synonyms.—Rosacea; Gutta rosea; Fr., Acne rosacée, couperose; Ger., Kupferose; Kupferfinne.

Definition.—A chronic affection of the skin characterized by hyperæmia, telangiectases, and increase in the number of the superficial capillaries, with inflammatory lesions, such as papules, pustules, and occasional hypertrophy of the fibrous tissue of the corium, particularly of the nose (Plate XL).

Symptoms.—The disease is limited to the face, occupying chiefly and frequently in mild cases exclusively the central third, although in advanced and neglected cases the whole face may be involved.

It usually begins as a transient redness of the forehead, nose, and adjacent parts of the cheeks, which later becomes more pronounced and more or less permanent. Sooner or later an eruption of pustules and papules, the latter often of a bright red color, appears in the reddened areas. Less frequently there is no precedent redness, but the disease begins with small bright red papules scattered over the chin and lower portion of the nose, often accompanied by slight scaling; this variety is seen more particularly in women. As the disease progresses the redness becomes more decided, the eruptive lesions increase in number, and dilated vessels make their appearance upon the nose and cheeks, especially upon the alæ of the former. In the later stages of the affection the nose enlarges, the enlargement being usually confined to the lower portion, the mouths of the ducts of the sebaceous glands are notably increased in size, and the entire nose is oily and of a dull red or violaceous hue. In a small proportion of cases the hypertrophy which occurs in the late stages of the disease gives rise to lobulated masses varying in size from a pea to a small nut, resulting in marked disfigurement, a condition to which the name rhinophyma is applied.

Notwithstanding the frequently marked inflammatory appearance of the forehead, cheeks, and nose, the skin is cold to the touch and subjective symptoms are as a rule entirely absent, although exceptionally itching and burning are present. The course of the affection is markedly chronic, characterized by exacerbations during which the redness is much increased and the number of papules and pustules greatly multiplied. These exacerbations are frequently accompanied by, or follow, symptoms of indigestion, and in women are especially apt to occur at or about the time of the menstrual period; indeed, a menstrual exacerbation is the rule. Unlike acne vulgaris, acne rosacea shows no tendency to disappear spontaneously, but, on the contrary, grows worse with advancing years.

Etiology.—It is decidedly infrequent before the age of thirty, although exceptionally it may occur in much younger subjects. Women are commonly said to be more frequently affected than men, but this preponderance in the female sex is probably more apparent than real,

PLATE XL

Acne rosacea.

since women are much more apt to seek advice on account of disfigurement than men. Disturbances of the alimentary canal from errors in diet, inordinate indulgence in tea, coffee, and alcoholic liquors, must all be reckoned among the causes which predispose more or less to the affection. Exposure to the weather is likewise a factor in its production. In women disease of the uterus or its adnexa is frequently associated with the malady, and, as has already been noted, each menstrual period is usually accompanied by a marked increase in the symptoms. Nasal disease, such as chronic catarrh, or other chronic affections of the interior of the nose, according to the observations of Seiler and others, strongly predisposes to it. Folliculitis of the vibrissæ by producing repeated congestion of the overlying skin, may serve as the starting point of the affection.

Pathology.—Authors are not quite in agreement as to its pathology. Some, as Leloir and Vidal, regard it as an acne occurring upon a skin chronically congested; Unna believes it a variety of seborrhœa, and would call it *rosacea seborrhœica.*

The earliest changes consist in the dilatation of the branches of both the superficial and deep network of vessels and especially of those surrounding the pilo-sebaceous follicles, probably the result of some toxic substance in the circulation of as yet undetermined character. This dilatation of the vessels, at first transient, later becomes permanent, and is followed by inflammatory changes in their immediate neighborhood and about the sebaceous glands, which are more or less increased in size. In the papules and pustules the same pathological changes are to be seen as in similar lesions of ordinary acne, namely, a cellular exudate composed of polymorphonuclear and lymphoid cells in varying quantity situated in and about the sebaceous glands. In the final stages of the malady, accompanied by an increase in the size of the nose, glandular hypertrophy in some cases predominates, while in others there is a pronounced increase in the fibrous connective tissue. Occasionally the blood and lymphatic vessels are so greatly enlarged as to present the appearance of an angioma (Leloir and Vidal).

Diagnosis.—Acne rosacea when typical is not readily mistaken for any other affection, but it is occasionally confounded with acne vulgaris, erythematous eczema, erythematous lupus, and syphilis.

It differs from ordinary acne by its limitation to the face, where it shows a pronounced predilection for the central portion, especially the nose, and by the associated hyperæmia and vascular dilatation always present in cases of any duration.

In the early hyperæmic stage, when papules are absent or small and few, if itching is present, as is occasionally the case, it is sometimes mistaken for erythematous eczema, but it differs from that affection by the mild type of the itching and the limitation of the redness to the nose and chin.

It can only be mistaken for erythematous lupus when the latter

is of the telangiectic type, but papules and pustules are never present in that disease, which usually terminates in a peculiar atrophic scarring.

Not very infrequently the hypertrophic stage is confounded with late syphilis of the nose of the nodular type, but the absence of ulceration and scarring in the former and their almost invariable occurrence sooner or later in the latter readily differentiate the two affections.

Prognosis.—Left to itself, the disease tends to grow more pronounced with years. Under appropriate treatment, however, cases of moderate severity are usually quite amenable, and even when the disease is marked great improvement follows the use of well-directed therapeutic measures and a careful regimen. When, however, there is any considerable degree of hypertrophic change, the prognosis is unfavorable as to cure, although the deformity which attends advanced cases may be greatly lessened by the surgical removal of the lobulated tumors.

Treatment.—In the general treatment of acne rosacea, careful regulation of the diet is of the first importance; and unless the patient willingly and intelligently coöperates with the physician in this, but little permanent improvement can be looked for. Plain, easily digested food, taken at regular intervals, the avoidance of condiments, sweets, pastry, rich soups and gravies, complete abstinence from tea, coffee, and alcoholic beverages, the avoidance of hot soups or hot drinks, or anything which tends to flush the face, all are a necessary part in the treatment. Occupations which expose the face to heat or to the wind should be avoided. When functional disorders of the uterus or its adnexa are present, as is frequently the case, these should have appropriate treatment if permanent improvement is to be obtained. When constipation is present, as it usually is, laxatives, the salines preferably, are to be given, and even in cases in which there is a daily evacuation of the bowels an occasional short course of fractional doses of calomel or five grains (0.32) of mercurial pill, followed by a saline, will often be advantageous. When there are symptoms of atonic dyspepsia, nux vomica or strychnia and hydrochloric acid may be given for a time. Fluidextract of ergot in doses of from twenty to sixty minims three times a day, or ergotin in doses of three to five grains (0.20 to 0.32) three or four times a day, has been advised for its supposed effect upon the dilated vessels, but its usefulness is more than doubtful. Unna advises ichthyol in three-grain (0.20) doses several times a day for the same purpose, but there is very little reliable evidence that it influences the vessels appreciably, and not infrequently it disturbs the stomach.

The local treatment is much the same as that of acne vulgaris, but as a rule lotions answer better than ointments. One of the most useful local applications is the zinc sulphide lotion in the strength of from five to ten grains (0.32 to 0.65) of each of the salts to the ounce (32.0). Instead of water, it may be made up with 70 per cent. alcohol

when the hyperæmia is marked; or two drachms (8.0) of the 1 : 1000 solution of adrenalin chloride may be added to each ounce (32.0) for its effect upon the vessels. Occasionally, however, such a lotion proves too irritating in any strength, especially in the cases characterized by small, bright-red papules upon the nose and chin, accompanied by itching. In such cases a saturated solution of boric acid will often answer well for a time. A solution of bichloride of mercury in 70 per cent. alcohol, 1 : 2000, is also a useful lotion. When there is an abundant eruption of pustules and papules and beginning thickening of the skin, Vleminckx's solution, one part to eight or ten of water, may be applied with good effect.

Among useful ointments may be mentioned sulphur 20 to 40 grains (1.30 to 2.60) to the ounce (32.0), resorcin 30 to 60 grains (2.0 to 4.0) to the ounce (32.0), ichthyol 1 to 2 drachms (4.0 to 8.0) to the ounce (32.0). Of these the sulphur ointment is the most generally useful. Ichthyol is often a valuable remedy, but its disagreeable odor and color limit its usefulness very much. One of the least disagreeable, and at the same time one of the most effective, ways of using it is to apply it as a varnish with a brush, using equal parts of ichthyol and water. After a few minutes it dries, leaving a brown varnish-like covering, which can be readily washed off with hot water.

As in acne vulgaris, the X-ray is a valuable method of treatment, but it must be used with care and discrimination.

The dilated venules are best removed by electrolysis. The needle attached to the negative pole is thrust into the vessels transversely and a current of two or three milliampères allowed to pass for twenty or thirty seconds; this is usually followed by the complete obliteration of the lumen of the venule and its ultimate disappearance.

In the milder grades of hypertrophy, linear scarification, electrolytic puncture, or repeated puncture with the Pacquelin or galvanocautery, using a small point, may be tried. The lobulated fibrous masses which occur upon the nose in advanced cases are to be dealt with surgically, removal with the knife being the shortest and most satisfactory way of dealing with them.

ACNE ARTIFICIALIS

An inflammation of the follicles resembling in many of its features acne vulgaris; may result from the ingestion of certain drugs, more particularly the compounds of iodine and bromine. These, unlike the eruption of true acne, are not limited to the face and shoulders, but are usually much more extensively distributed.

The introduction of such substances as tar, paraffin, and chlorine into the follicles from without, as happens in those employed in certain occupations, frequently gives rise to blocking up of their mouths, with the formation of large comedones and inflammation of the follicle. Such artificial acnes are characterized by a widespread distribution of large, black or brown comedones, and numerous acne-like pustules

situated chiefly on the trunk and extremities, rather than the face. These paraffin and tar acnes (Fig. 240), when of long duration, may be followed by the formation of inflammatory wart-like lesions, which not infrequently terminate in epithelioma, the so-called tar or paraffin cancer.

Treatment.—The first and most important point in the treatment of these artificial acnes is the removal of the cause. When they are due to drugs, these should be suspended. In tar and paraffin acne the patient should be informed of the cause of the eruption and should be advised to bathe frequently and change his clothing often, since these, when

Fig. 240.—Paraffin acne. Patient worked in an oil refinery.

saturated with paraffin or tar, serve to convey these substances to the follicles. If these precautions are observed, the disease may in large measure be prevented. In the treatment of the eruption the same remedies may be employed as in acne vulgaris.

ACNE VARIOLIFORMIS

Synonyms.—Acne necrotica; Acne frontalis; Acne atrophica; Acne rodens.

Definition.—A chronic acne-like inflammation of the skin characterized by pustules, situated about the margin of the scalp and over the sternum, rarely in other regions, followed by pit-like cicatrices.

Symptoms.—Acne varioliformis, a name first given to the affection by Hebra, is situated for the most part upon the forehead and temples, particularly at the border of the hair, in the scalp (Fig. 241), and less frequently upon the hairy portion of the sternum; quite exceptionally it may occur upon the extremities. It is distinguished by an eruption of small red papules upon which presently pustules appear, which dry into blackish depressed and adherent crusts. After ten days to two weeks the crusts fall, leaving small pit-like indelible scars, resembling those of variola, hence the name given the affection. The number of lesions present at any one time is usually small and they are commonly discrete without any special arrangement; occasionally

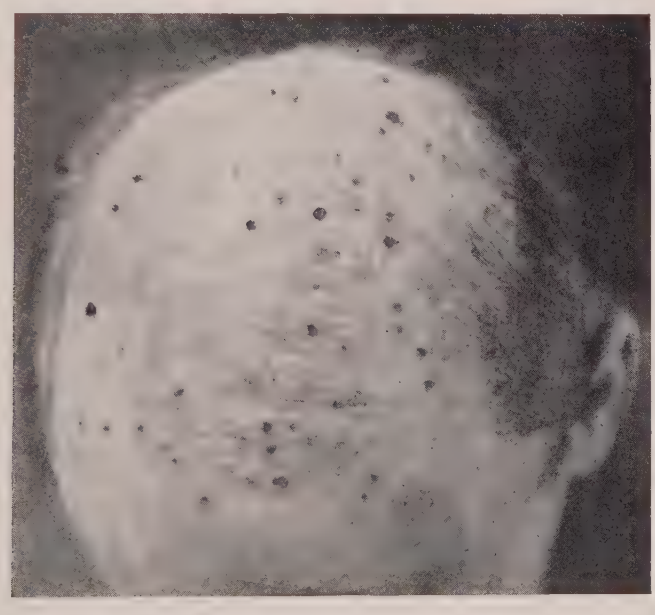


Fig. 241.—Acne variolifcrmis.

they are quite numerous and may show a tendency to occur in groups. Beyond occasional slight itching and moderate tenderness when the inflammation is at its height, the eruption is not accompanied by any decided subjective symptoms. The affection is a chronic one, the lesions coming and going for a number of years.

Etiology.—Sex seems to have but little, if any, influence upon the incidence of the disease. Unlike ordinary acne, it is uncommon in young adults, being seen most frequently between the ages of thirty and fifty.

The weight of evidence is much in favor of its microbic origin. Sabouraud believes it a mixed infection of the hair-follicle with the micro-bacillus of seborrhœa and the staphylococcus, the latter being a secondary invasion. Unna likewise thinks the infection a mixed one,

the organisms being a small bacillus resembling the acne bacillus, and a diplococcus. The latter organism, by destroying the former, eventually brings about the healing of the lesion.

In the early lesions taken from one of his cases, Fordyce found great numbers of staphylococci, which he was inclined to regard as the etiological factor, but in older lesions taken from a second case no organisms at all were found.

Pathology.—There is apparently but little doubt that the disease is an infection which has its seat in the pilo-sebaceous follicles. Some authors are inclined to regard it as of tuberculous origin and would place it among the so-called tuberculides (Stelwagon and others).

The histological studies of Leloir and Vidal, Fordyce, Sabouraud, and Touton have shown that it is a folliculitis. About the upper portion of the follicle, usually above the sebaceous gland, there is a dense round cell exudate which, with the evolution of the lesion, extends laterally and upward, occasionally downward, surrounding the sebaceous gland, involving the follicular wall, which is followed by necrosis and complete or partial destruction of the follicle.

Diagnosis.—Acne varioliformis is distinguished from ordinary acne by its localization upon the scalp or other hairy region and the peculiar pit-like scars which follow the eruption. It is frequently mistaken for the pustular syphiloderm, but its localization about the margin of the scalp and its frequent limitation to this region, the black, sunken crusts which cover the lesions, and the absence of other symptoms of syphilis are usually sufficient to distinguish it from that malady.

Treatment.—Crocker found the iodide of potassium produced improvement in most cases; in others, chloride of iron was found more useful. I have found Donovan's solution in five-minim doses, three times a day, apparently influences the disease favorably.

Local treatment is much more effective than the internal. In the author's experience one of the most effective local applications is the zinc sulphide lotion, 15 grains (1.0) each of sulphate of zinc and sulphuret of potash to the ounce (32.0) of water, mopped on twice a day. Stelwagon advises a solution of resorcin in a saturated solution of boric acid. An ointment of ammoniated mercury, 40 to 60 grains (2.60 to 4.0) to the ounce (32.0), rubbed in gently twice a day, is often an effective remedy.

Prognosis.—Although lasting indefinitely, if left to itself, a cure may usually be expected under judicious treatment, but relapses are very likely to occur sooner or later unless the local treatment is continued for some time.

ACNITIS

Synonyms.—Disseminated follicular lupus (Tilbury Fox); Acne telangiectodes (Kaposi); Hydradenitis destruens suppurativa (Pollitzer); Acne agminata (Crocker).

This infrequent malady, which was described by Barthelemy, in

1891, who gave it the name *acnitis,* is probably identical with the affection described by Tilbury Fox, in 1878, as disseminated follicular lupus. Although Barthelemy regarded it as distinct from the disease which he described under the name *folliclis,* the papulo-necrotic tuberculide of other writers, most authors look upon it as simply a variant of that affection.

Symptoms.—It usually begins rather suddenly with the appearance upon the face of millet-seed-sized painless nodules deeply seated in the skin, which at first produce little or no visible elevation, but which gradually enlarge until at the end of eight to ten days they have reached the size of a small pea. When fully developed they form brownish-red papules, many of which show a waxy translucency, which usually suppurate, discharging a drop or two of pus which dries into a crust. At the end of three or four weeks the crust falls and the papule disappears, leaving a small depressed pigmented scar. Not all of the lesions, however, undergo suppuration; some of them after three or four weeks gradually disappear without any appearance of pus, with or without scarring. The eruption usually appears in crops at intervals of a few days, and is situated almost exclusively upon the face, where it tends to form patches on the cheeks, chin, and forehead; isolated papules are sometimes seen upon the neck and extremities. The numbr of lesions is usually considerable, in some instances amounting to hundreds. The disease reaches its acme in the course of three or four months, after which each succeeding crop becomes smaller until at the end of six months or a year recovery usually takes place. There is little or no tendency to recurrence.

Etiology and Pathology.—All the cases thus far observed have been in adults who have presented no special symptoms of disease outside the cutaneous eruption. As has already been noted, most authors regard it as simply a variety of the papulo-necrotic tuberculide, the folliclis of Barthelemy, but efforts to find the tubercle bacillus and attempts at animal inoculation have resulted almost without exception in failure. Quite recently, however, Arndt has reported finding the organism in the lesions. As to its histopathology, it is a granuloma presenting the features of tuberculosis. Darrier, who examined lesions from one of Barthelemy's cases, found an accumulation of lymphoid, epithelioid, and giant-cells about the pilosebaceous follicles, and Galloway reported practically the same findings in one of Crocker's cases. More recently Schamberg found an enormous cellular exudate extending through the entire thickness of the corium, consisting chiefly of round cells with many giant cells, some of the Langhans type. The exudation involved the hair-follicles and the sweat-glands, but he was unable to decide whether the process originated in the latter as Pollitzer and Unna believe, or whether these were involved only secondarily.

Diagnosis.—The diseases which it may resemble more or less at times are acne, the papulo-necrotic tuberculide, and syphilis. From

acne it may be distinguished by the grouping of the lesions, the waxy lustre of many of them, and their comparatively sluggish course. In the papulonecrotic tuberculide the eruption shows a decided predilection for the hands and the neighborhood of the joints, avoiding the face as a rule, while just the reverse is true in acnitis. The former is almost invariably associated with chronic adenitis or other symptoms of tuberculosis, while the latter exhibits no such association. Its resemblance to syphilis is at times considerable, but it differs from that disease in its usual limitation to the face, the uniform character of the lesions, and the absence of general adenopathy.

Treatment.—It is very doubtful whether the course of the disease is materially influenced by either general or local treatment. Besnier believed he obtained beneficial effects from salol administered internally; Schamberg thought his patient did better after taking biniodide of mercury. One of the most useful local applications is the lotion of sulphate of zinc and sulphuret of potash 15 or 20 grains (1.0 or 1.30) of each to the ounce (32.0) of water. An ointment of ammoniated mercury 30 to 40 grains (2.0 to 2.60) to the ounce (32.0), or one containing 40 grains (2.30) of precipitated sulphur to the ounce (32.0), may be used with good effect.

Prognosis.—Recovery usually takes place in the course of some months, but more or less scarring follows the eruption.

ACNEFORM INFLAMMATIONS

ACNE URTICATA

Under the name *acne urticata* Kaposi first described an acne-like eruption occurring in the regions affected by ordinary acne, such as the face, the upper part of the trunk, and the arms. The primary lesion, which is usually difficult to see as it is destroyed early by the patient's nails, is a small, wheal-like papule upon the summit of which a vesicle with turbid contents appears, which is soon scratched off and replaced by a crust or superficial excoriation. The eruption comes out in crops, is usually quite superficial, and is accompanied by marked itching, which only disappears when the top has been torn off by scratching The affection, which is not a common one, runs a chronic course, lasting for months and years. It is usually seen in young adults of both sexes, but in the author's experience is much more frequent in young women than in young men.

While the malady bears a certain superficial resemblance to ordinary acne it is quite distinct from it, and is probably more nearly related to the so-called acne varioliformis than to acne vulgaris. Löwenback, who had the opportunity to carefully study clinically and histologically a case of the affection, believes it stands midway between acne varioliformis and urticaria perstans.

ACNE KERATOSA

Under this title Crocker described some years ago an unusual form of acne situated upon the face, principally about the angles of the mouth, in which there were red, rather firm nodules on which pustules formed, and in which were imbedded small conical plugs of horny material. These plugs produced great irritation, and in order to obtain relief the patient was impelled to squeeze them out. After extraction of the plugs the lesion slowly healed, leaving a scar. The course of the affection was a very chronic one, lasting in one case forty years.

DISEASES OF THE SWEAT-GLANDS

ANIDROSIS

Definition.—A functional disease of the sweat-glands characterized by a diminution, or in rare instances total suppression, of the sweat.

Symptoms.—The skin is dry and harsh, frequently covered with scanty furfuraceous scales, and is inclined to fissure in the normal lines and about the smaller joints. Diminution of the perspiration is a symptom of many diseases of the skin, particularly those of inflammatory character; it accompanies ichthyosis, psoriasis, eczema, prurigo, erysipelas, in the last of which it is, according to Aubert, suppressed for the time altogether in the affected area. It is greatly diminished or altogether suppressed in the patches of scleroderma and in the anæsthetic areas of leprosy, injections of pilocarpin being usually without effect in such areas.

In the majority of cases the lessened amount of sweat is due to the inhibition of the activity of the sweat-glands; in rare instances its total absence is the result of a congenital absence of the glands, as in the cases reported by Tandlâu (quoted by Török, Mracek's "Handbuch der Hautkrankheiten"). In a small number of instances it has been noted to follow disease or injury of the spinal cord, of peripheral nerves or some portion of the sympathetic nervous system.

Treatment.—The treatment of the symptomatic form, which is by far the more common, is quite secondary to the treatment of the diseases of which it is a minor symptom; with the disappearance of these it also disappears. Daily warm baths, the wearing of warm clothing, and the taking of an abundance of fluids will serve to increase the excretion of sweat. The cases of total absence of sweat due to congenital absence of the sweat-glands are irremediable, of course.

HYPERIDROSIS

Synonyms.—Idrosis; Polyidrosis; Ephidrosis; Sudatoria; Fr., Hyperidrose; Ger., Schweissfluss.

Definition.—A functional disorder of the sweat-glands characterized by excessive sweating.

Excessive sweating may be general or local, symptomatic or idio-

pathic. It is a frequent symptom in many general diseases, acute or chronic, especially those accompanied by elevation of temperature, such as pneumonia, typhoid fever, in both of which it frequently occurs as a critical symptom, tuberculosis, particularly pulmonary tuberculosis, malaria, rhachitis, especially about the head, and in the rare epidemic affection known as the "sweating sickness," *sudor Anglicus*. The dermatologist, however, is especially concerned with the idiopathic form, and more particularly with the regional varieties.

Symptoms.—Excessive general sweating occurring quite independently of any other manifest disturbance of health is not at all uncommon, but it is not always easy to say when this is pathological, since like other secretions what may be excessive for one individual may be normal for another.

In the local forms which may present all degrees of severity, corresponding regions are affected on both sides of the body, such as both axillæ, both palms, both soles; much less frequently the sweating occurs only upon one side. The regions most frequently affected are the palms and soles and next to these the axillæ; all three may be affected simultaneously or separately. The palms may be simply damp or clammy, or the sweating may be so profuse that they drip with moisture, saturating gloves in a very short time. The sweating may be continuous or come on in paroxysms, sometimes as the consequence of some emotional disturbance, often slight, or from some unknown cause. The same variation in intensity occurs in hyperidrosis of the soles; they may be damp and cold, or the perspiration may be so abundant that the socks are saturated, although changed several times a day. In the milder cases the skin shows but little change, but in the severe ones the horny layer, particularly on the heels and between the toes, is white and sodden, and in the former region the macerated areas are frequently surrounded by a hyperæmic border. The soles may become sensitive so that walking is painful, and when the maceration is extreme the entire horny layer of the epidermis may be stripped off, leaving a red, raw-looking surface so sensitive that walking is for a time impossible. As a sequel of chronic hyperidrosis a more or less marked hyperkeratosis at times appears upon the palms and soles, much more frequently in the latter than in the former region. Owing to decomposition of the sweat and macerated epidermis a particularly offensive odor commonly accompanies hyperidrosis of the feet (*bromidrosis, q. v.*).

When hyperidrosis occurs in the axillary, genito-crural regions, or between the buttocks, the consequent maceration of the epidermis and friction frequently give rise to an intertrigo or to an eczema.

Unilateral sweating is rare and presents numerous variations in its location and distribution. It occurs more frequently in the face than in any other region, especially in the area of distribution of the fifth pair of nerves. It may be limited to an extremity or to the lateral half of the trunk. In very rare instances it has been observed to

occupy one-half of the face and the opposite half of the trunk, *crossed hyperidrosis* (Kaposi).

It is occasionally limited to very circumscribed areas, as in the case recently reported by Sutton in which it was confined to the inner extremity of the left eyebrow.

In the great majority of cases hyperidrosis pursues a very chronic course, lasting for many months or years. Quite exceptionally it may begin suddenly and last but a short time, as in a case under the author's observation some years ago. A man without any signs of ill-health suddenly began to sweat profusely upon the palms, the sweat trickling from the finger-tips; after eight to ten hours it ceased as suddenly as it had begun and never returned.

Etiology and Pathology.—Excessive sweating occurs most frequently between the ages of fifteen and forty-five, but is often seen considerably before and after this period. Sex exerts no apparent influence upon its incidence. Exceptionally it seems to be hereditary. As has already been noted, excessive general sweating is frequently associated with symptoms of some constitutional disease; in the local forms, however, the patient as a rule presents no signs of ill-health, although there are at times symptoms of neurasthenia, especially in those who suffer from hyperidrosis of the palms. A number of observers have noted the frequent association of flat-foot with hyperidrosis of the soles (Lesser, Hardaway and Allison), and attribute a causal influence to it. Palmar and plantar hyperidrosis occasionally follow the administration of arsenic in considerable doses for considerable periods, the excessive sweating preceding a characteristic hyperkeratosis of these regions.

Unilateral sweating is most commonly associated with injury to or disease of the peripheral nervous system, or less frequently of the brain and spinal cord. The classical experiments of Claude Bernard demonstrated that unilateral sweating of the face could be produced by injury to the cervical sympathetic; and localized sweating has been noted to follow injury, such as gun-shot wounds (Weir Mitchell) of the peripheral nerves. Less frequently unilateral hyperidrosis occurs in individuals who present no discoverable signs of disease. It may occur as an idiosyncrasy with regard to certain articles of food or drink. Török records a remarkable example of the former observed in the person of a colleague who was perfectly healthy, in whom food containing red Cayenne pepper, vinegar, cheese, or mustard produced profuse sweating of the left half of the face, neck, and chest, while heat, warm drinks and exertion produced sweating on the right side only. Hutchinson noted an instance in which drinking tea caused sweating of the feet.

There is but little room for doubt that unilateral or regional hyperidrosis is dependent upon some abnormality, inborn or acquired, of some portion of the nervous system, although in many, if not most, instances the nature of this abnormality is not demonstrable.

Virchow, who examined the sweat-glands of an individual dead from pulmonary tuberculosis, found fatty degeneration of the epithelium of the gland. Robinson was not able to find any alterations in the glands in hyperidrosis of the palms.

Prognosis and Treatment.—Owing to the frequently erratic character of the affection the prognosis is very uncertain. Occasionally after a variable course it disappears spontaneously, but relapses are apt to occur. The majority of cases of hyperidrosis of the palms and soles last for months and are frequently very resistant to treatment.

In debilitated and neurasthenic subjects general tonics, such as strychnia and iron, more especially the tincture of the chloride of iron, or the mineral acids, such as aromatic sulphuric acid, are occasionally of use. Drugs which directly diminish the secretion of sweat, such as belladonna, or its alkaloid atropin, agaricin, and picrotoxin may be given with temporary benefit, but seldom produce lasting improvement, the sweating reappearing promptly with the suspension of the drug. Crocker found sulphur, given in teaspoonful doses, twice a day, the best of all internal remedies; he asserted that cases treated with this remedy seldom required local treatment. If it acts too freely upon the bowels its effect should be controlled by the administration of astringents.

Local treatment is in most cases indispensable and is usually far more effective than any constitutional treatment.

Astringent lotions containing sulphate of zinc, acetate of alumina or tannic acid, in strengths varying from one-half to five per cent., are frequently useful in the milder cases; they should be mopped on two or three times a day and followed by a dusting powder of equal parts of oxide of zinc and talc, or, what is usually much more effective, powdered boric acid, which should be liberally applied. Perhaps the most effective of all the lotions is one containing from 10 to 20 per cent. of formalin, a 40 per cent. solution of formaldehyde. Owing to its irritating properties only the milder solutions are to be used in regions in which the skin is sensitive such as the axillæ and about the genitalia; upon the soles of the feet and the palms it may be used much stronger. It should be applied with a brush or a small mop of absorbent cotton once or twice a day and should be followed by a dusting powder. In hyperidrosis of the feet the liberal use of powdered boric acid to the inside of the stockings and the shoes and between the toes, as recommended by Thin, will frequently suffice to check the excessive sweating in mild cases. A dusting powder of talc and oxide of zinc containing from 5 to 10 per cent. of salicylic acid is likewise often most useful; it should be applied to the inside of the stockings and between the toes twice a day. Frederique advised the employment of finely pulverized tartaric acid in the stockings; as this sometimes proves quite irritating it should be used with some care. Török speaks well of tannoform, a condensation product of formaldehyde, and tannic acid, used as a dusting powder in the stock-

ings, either pure or mixed, with an equal quantity of talcum. Painting the soles with a 5 per cent. aqueous solution of chromic acid once a week frequently produces good results. Owing to the possibility of toxic effects from absorption, it should not be used upon raw surfaces. Legoux advises painting the soles with a mixture of the solution of the sesquichloride of iron, 30, and glycerin, 10, as most effective, occasionally bringing about a cure in a few days.

The treatment devised by Hebra has frequently afforded excellent results, but is far too troublesome for the average patient. Diachylon ointment spread upon strips of lint is closely bound upon the feet and placed between the toes after carefully washing and drying them. This application is renewed twelve hours later after thoroughly rubbing, not washing, off the old application with a dry cloth and a dusting powder. This is repeated every day for ten days to two weeks, at the end of which time the epidermis will have come off in brownish flakes. When desquamation is complete the feet may be washed and a dusting powder applied daily for some time longer.

The X-ray has recently been employed with good results in a number of instances (MacKee, Ormsby, and others).

CHROMIDROSIS

Synonyms.—Ephidrosis tincta; Ephidrosis discolor; Colored sweating; Stearrhœa nigricans; Seborrhœa nigricans; Pityriasis nigricans.

Definition.—A functional disorder of the sweat-glands characterized by colored sweat.

Symptoms.—Although the earliest case to be found in literature was published as early as 1709 by Yonge of England (Crocker), it was not until much later that the publications of Le Roy de Mericourt (1857–1864) called the attention of the profession to this rare and remarkable affection. Although the conclusions of this author were generally received with considerable scepticism and their correctness denied by the French Academy of Medicine, and although a number of the reported cases are not above suspicion, it is generally admitted at the present time that genuine cases of colored sweating do occur.

The most frequent form of the affection is characterized by a black, brownish-black, blue-black, or grayish discoloration situated in most instances on the lids, especially the lower lids, and the region about the eyes. While the orbital region is the one most frequently affected, it may also occur on other parts of the face, such as the forehead, nose, and around the mouth, to which parts it occasionally extends from the lids, on the neck, the hands, the chest, the back, abdomen, groins and scrotum. The discoloration is due to the presence on the skin of a finely granular, in some instances flaky and slightly greasy, material which is removed with difficulty by soap and water, but is readily wiped off with oil; when removed it is slowly reproduced. Besides the various shades of black, brown, and blue, other colors have been in rare instances observed. Dubreuilh has reported a case in which the

thumb of both sides and one wrist were red. White, one in which the underwear was stained a bright saffron yellow on one side of the trunk only, the skin itself being of normal color. In rare cases the color has changed from time to time or has varied in different situations (Purdon). In a few cases discoloration of the hair has been associated with the colored sweat.

Etiology and Pathology.—In the great majority of cases the subjects of chromidrosis have been girls or women between the ages of fifteen and fifty who have presented more or less marked and unmistakable symptoms of neurasthenia or hysteria; in a small minority they have been men in apparently normal health. In some instances it has followed strong emotional disturbance, as in one recorded by Hyde, in which it appeared after the excitement produced by the receipt of good news. Since a large number of the patients have resided in the neighborhood of the sea, this has been supposed to bear some causal relationship to the affection (de Mericourt, Mitchell), but this is extremely hypothetical. Green sweat has been observed in workers in copper (Clapton), and Hyde has recorded an example which followed the application of a copper electrode to an abraded surface. Collman and Scherer have reported a case in which a man while taking iron had a light-blue discoloration of the scrotum which gave the chemical reaction for iron. Blue sweat has been attributed to the presence of indican in the excretion, many of the patients suffering from obstinate constipation; excreted in the colorless form it oxidizes and turns blue when exposed to the air. Temple observed pink sweat with simultaneous discoloration of the hair in an individual who was taking iodide of potassium. The so-called red chromidrosis of the axilla is not a true chromidrosis, as the sweat is colorless when excreted, but it dissolves the pigment contained in small nodules attached to the hair (*lepothrix, q.v.*) and thus produces staining of the underwear.

In all probability the sebaceous- as well as the sweat-glands are involved in this disorder, this being especially the case when the coloring material upon the skin is greasy. Under the microscope the coloring substance presents a finely granular or occasionally crystalline appearance. The chemical examinations made by a number of investigators have given such varying results that no definite conclusions can be drawn from them in most of the cases.

The affection is without doubt, in most instances, dependent upon some functional disturbance of the nervous system, the nature of which is quite unknown.

Diagnosis.—The appearance of the affection is usually so striking and peculiar that it is readily recognized. It is necessary, however, to be constantly on one's guard to escape being deceived by factitious cases.

Prognosis and Treatment.—The course of the malady is in most instances a chronic one, but recovery usually takes place, occasionally spontaneously.

Treatment is to be directed to improvement of the patient's general condition and the removal of the underlying nervous affection which causes it. Local treatment is of little or no avail; removal of the discoloration is always followed by its reproduction.

BROMIDROSIS

Synonyms.—Bromhidrosis; Osmidrosis; Stinking sweat; Fr., Bromidrose; Ger., Stinkschweiss.

Definition.—A functional disorder of the sweat-glands distinguished by sweat of an offensive odor.

Symptoms.—The sweat generally may have a disagreeable odor, as in certain individuals and in the members of certain races, as the negro. A disagreeable odor of the sweat frequently accompanies a number of febrile disorders, such as acute articular rheumatism, typhoid fever, and the exanthemata in which the odor is frequently more or less characteristic. In the great majority of cases, however, bromidrosis is a regional affection, the regions especially affected being the axillæ, the genitalia particularly in women, and most frequently of all the feet. The character and intensity of the odor vary greatly; it may be simply stale and disagreeable, or it may be an intolerable stench perceptible some distance, making social intercourse impossible with the unfortunate subject. In most instances there is an excessive production of sweat, but the offensive odor may be present in sweat normal in quantity. Gerber has recorded an instance, however, in which the patient under ordinary conditions presented no trace of bromidrosis, but when he perspired profusely, as after eating, drinking or exercising, he gave off so disagreeable an order that he was compelled to forego all social intercourse. Upon the feet when there is hyperidrosis as well as bromidrosis redness, vesiculation and occasionally bullæ may appear, making walking painful or impossible.

In rare instances the sweat has a peculiar, but not disagreeable odor, or even an agreeable odor. Hammond has reported an instance in which it had an odor resembling violets and another in which it was like pineapple. In diabetes mellitus it occasionally has the odor of acetone.

Etiology and Pathology.—Bromidrosis occurs most frequently in young adults, particularly in those who are for hours upon their feet and who are anæmic or neurasthenic. Thin found a bacterium in the sweat, the *Bacterium fœtidum*, to which he attributed the production of the offensive odor. Hebra long ago pointed out that in most instances the sweat was devoid of disagreeable odor when first excreted and only became offensive after it had been upon the skin for some time. There is no doubt that the affection is the result of decomposition of the sweat and of epithelial *débris* and sebaceous material. Abnormal odors may arise in the sweat after the ingestion of certain articles of food, such as onions, garlic, or after taking certain drugs,

such as copaiba, turpentine, asafœtida. In rare cases the odor may accompany some nervous disorder, particularly hysteria and neurasthenia; the genuineness of such cases, however, is to be accepted with considerable reserve.

Treatment.—The treatment of bromidrosis is practically the same as for hyperidrosis; indeed, as already observed, the two are in most instances associated. Especially useful are lotions and dusting powders containing substances which inhibit decomposition, such as lotions of formalin, boric acid, or of permanganate of potash, and dusting powders containing tannoform and salicylic acid; these are to be employed in the same manner as in hyperidrosis. Crocker regarded sulphur internally and boric acid locally as the best treatment. The internal administration of sodium salicylate has been credited with a cure in some instances (Crocker). Frequent washing with soap and hot water and thoroughly dusting the stockings and the shoes with a dusting powder containing 50 per cent. of tannoform is probably one of the least troublesome and most effective methods of treatment. The X-ray has been employed with benefit in a number of instances.

URIDROSIS

Synonyms.—Sudor urinosus; Urinidrosis; Fr., Uridrose; Ger., Harnschweiss.

Definition.—The excretion of some of the constituents of the urine, particularly urea, in the sweat.

Symptoms.—The sweat normally contains traces of urea (Landois), and this may be very sensibly increased in certain diseases of the kidneys which interfere seriously with their excretory function. Urea may also appear in the sweat in considerable quantities in other affections in which the urinary excretion is suppressed, as in cholera (Drasche). It appears as a fine white crystalline deposit with a urinous odor, most noticeable upon the exposed parts of the skin, such as the face, hands, and forearms, which, when the excretion is considerable, look as if lightly dusted with flour.

PHOSPHORIDROSIS

Synonym.—Photidrose (Audry).

Definition.—Phosphorescent sweat.

As an extremely rare condition the sweat may be phosphorescent. Panceri (quoted by Duhring) has reported the case of a physician who, during an illness caused by eating phosphorescent fish, excreted sweat which was luminous in the dark; Köster (Carpenter's Physiology) has recorded an instance in which the sweat after violent exercise made the underwear phosphorescent. Luminous sweat has also been observed in phthisis and in miliaria.

HÆMATIDROSIS

Synonyms.—Hæmathidrosis; Hæmidrosis; Sudor sanguineus; Ephidrosis cruenta; Fr., Hématidrose, sueurs sanglantes; Ger., Blutschwitzen, Blutschweiss.

Definition.—Bloody sweat.

Symptoms.—This very rare affection, the existence of which was long doubted until the observations of such competent observers as Parrot, Hebra, Chambers, Erasmus Wilson, M'Call Anderson and others had proven its occurrence, is distinguished by the appearance of a pink or red fluid composed of blood pure or diluted upon the unbroken skin. It usually appears without any premonitory symptoms, but in a small proportion of cases its appearance is preceded by sensations of pricking, throbbing, or burning, or much less frequently by hyperæmia or an eruption of vesicles; it is doubtful, however, whether these last properly belong in the same category with the cases in which no alteration of the skin precedes the hemorrhage. The bleeding is usually limited to small areas which may be situated upon any part of the cutaneous surface, but is more frequent upon the ends of the fingers, in the face, upon the forehead, the nose, in the axillæ, upon the chest, the inner surface of the thighs, and the feet. The quantity of blood is usually inconsiderable and the duration of its discharge short, varying from a few minutes to several hours. It usually oozes out slowly, almost imperceptibly, but may in exceptional cases escape freely for a short time, as in the one observed by Hebra, in which it was discharged as a small jet from the back of the hand.

Etiology and Pathology.—With but very few exceptions the disease is confined to females during the age of sexual activity who present the stigmata of hysteria or suffer from derangement of the menstrual function; in a few instances it has been observed in those with suppressed menstruation, appearing at the usual menstrual periods (vicarious menstruation). A few notable exceptions, however, have been recorded; Hebra's case, already referred to, occurred in a young man strong and well nourished.

The affection is not, accurately speaking, a secretion of bloody sweat, as was pointed out long ago by Hebra, but a hemorrhage from the skin in which the blood escapes from the mouths of the sweat-ducts, as Crocker has expressed it, "a purpura of the sweat-glands." Török found red blood-cells in the lumen of the coils of the sweat-gland, and Tittel could express blood from the sweat-pore in a case under his observation (quoted by Török, Mracek's "Handbuch der Hautkrankheiten").

Diagnosis.—The appearance of blood upon the skin without any solution of continuity, which slowly reappears when wiped off, especially in an hysterical female, is so characteristic that the diagnosis presents no difficulties; but it is necessary to be on one's guard always against fraud.

Prognosis and Treatment.—The amount of blood lost is so insig-

nificant that it in no way impairs the patient's general condition, but the affection is likely to run an irregular and indefinite course.

The treatment is essentially that of the nervous disorder upon which it in most cases depends.

HIDROCYSTOMA

Synonyms.—Hydrocystoma; Cyst of the coil-ducts.

Definition.—A non-inflammatory affection of the ducts of the sweat-glands characterized by small vesicle-like cysts situated in the face.

Symptoms.—This affection which was first described by Robinson,

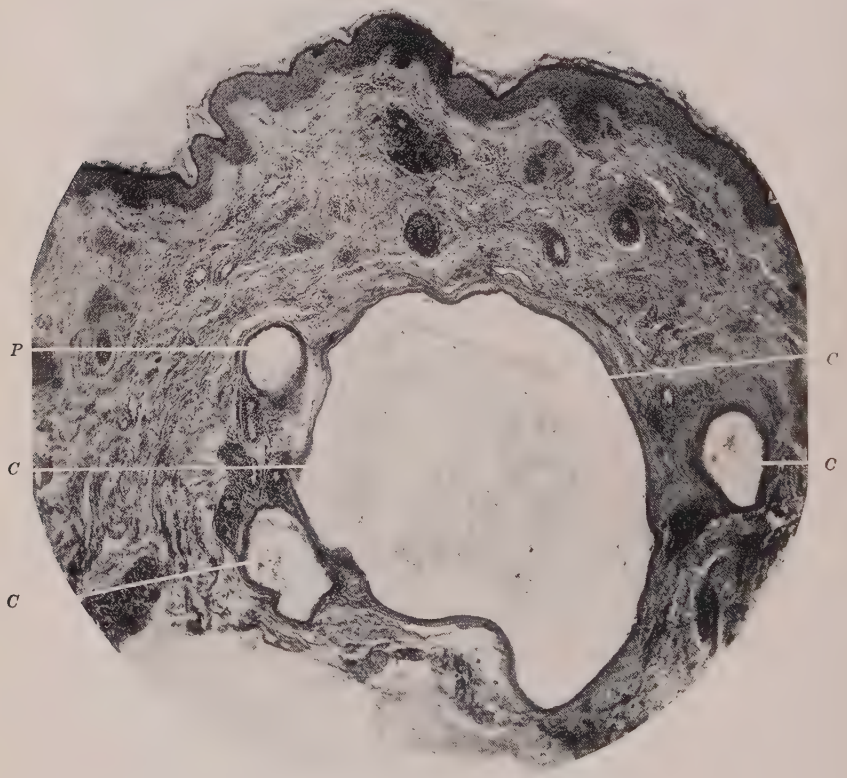


FIG. 242.—Hidrocystoma. Cysts, *c*, *c*, formed by dilated sweat-ducts.

in 1884, is distinguished by pin-head- to split-pea-sized tense vesicles situated upon the cheeks, nose, forehead, and, less frequently, upon the cutaneous surface of the upper and lower lips. They are translucent, pearly, or, when large, bluish in color, and when deep-seated resemble sago-grains embedded in the skin. Often limited in numbers there may be as many as a hundred or more. After a time the contents of

some of them dry up, they become whitish, resembling milium, and eventually disappear by absorption. In their early stages they are always deep-seated, but as they grow larger they project more or less decidedly above the surface. The lesions are usually symmetrically distributed over the cheeks and nose, but in a case observed by Hutchinson they were limited very largely to one side.

Etiology and Pathology.—The disease has been observed almost without exception in middle-aged women who, exposed to heat and moisture, such as laundresses, sweat freely. It is usually worse in summer, and may disappear wholly or in part in winter. In the unilateral case reported by Hutchinson, referred to above, the patient sweated only on the side occupied by the eruption. In a case observed by Hallopeau an exacerbation occurred at the menstrual period. Hyde and McEwen saw a typical case in a woman past the menopause who suffered from exophthalmic goitre accompanied by sweating.

The affection is a cystic dilatation of the duct of the sweat-gland (Fig. 242) situated in the deeper portion of the corium just above the coil. Adam reports the finding of cysts in the gland itself, but this finding has not been confirmed by other investigators. In the upper part of the corium in the neighborhood of the larger and older lesions a moderate exudation of leucocytes is present. The cysts are filled with a fluid presenting the characters of normal sweat.

Diagnosis.—The affection is readily recognized; the non-inflammatory character of the vesicles, their deep seat, their limitation to the face, and their occurrence in middle-aged women exposed to heat and moisture, are characteristic features.

Treatment.—Puncture of the lesions and evacuation of their contents will cause them to disappear. Prolonged exposure to heat, particularly moist heat, and other causes of excessive sweating should be avoided.

MILIARIA

Synonyms.—Miliaria rubra; Miliaria alba; Strophulus; Red gum; Lichen tropicus; Prickly heat; Fr., Miliaire; Ger., Frieselausschlag.

Definition.—An acute inflammatory affection associated with profuse perspiration, characterized by an eruption of small, bright-red papules or minute papulo-vesicles.

Symptoms.—The eruption, which occupies the trunk chiefly, but also occurs on the face and extremities, appears rather suddenly after profuse sweating during hot weather, or in those who are exposed for hours to heat and sweat profusely in consequence. It occurs as innumerable minute bright-red papules (*miliaria papulosa, lichen tropicus*), or as very small, for the most part acuminate, papulo-vesicles and vesicles with clear contents (*miliaria rubra, miliaria vesiculosa*), which after some hours or a day become cloudy (*miliaria alba*). After a few days the eruption, which is a very abundant one, the lesions being closely placed but discrete, begins to fade; the contents of the

vesicles are absorbed or dry into minute yellow crusts, which cap the lesions, and a moderate branny desquamation follows for a short time. While the individual lesions are short-lived, the eruption as a whole may continue for some weeks, new crops of vesicles appearing more or less continuously. In poorly cared-for infants, in whom it is very common during the hot summer months, it is frequently accompanied by furunculosis and often terminates in eczema when prolonged. In adults eczema may follow in regions where there is friction of opposed surfaces, such as the axillæ, the groins, beneath the breasts in women, and between the folds of skin in obese individuals. More or less marked itching and burning accompany the eruption.

Etiology and Pathology.—Miliaria is most common in the hot months of summer in children, and at any season in small infants who are overclothed. The affection popularly known as "red gum," or simply as "gum," strophulus, is a miliaria occurring in new-born infants as the result of overclothing. It is also common in adults who are exposed to high temperature and perspire excessively. The eruption is a very common one among Europeans in tropical countries.

The vesicles are situated between the horny and granular layers of the epidermis, or in the upper portion of the rete mucosum, and contain granular material, leucocytes, and a few swollen epithelial cells. The papillary vessels are dilated and are surrounded by a moderate cellular exudate in which Török found "mastzellen." According to Robinson, the affection is an inflammatory disease of the epidermis, the lesions resulting from an exudation in the rete mucosum around the orifice of the sweat-duct; he also believes they may form independently of the sweat apparatus. Pollitzer regards the vesicles as small retention cysts situated in the sweat-duct resulting from a swelling of the epidermic cells in a skin insufficiently provided with fat. Török was unable to demonstrate any connection of the vesicles with the sweat-duct.

Prognosis.—Miliaria may be confounded with papular and vesicular eczema; it differs from these, however, by the suddenness of its appearance, usually in hot weather or in those exposed to heat, by its association with profuse sweating, by the diffuse character of the eruption, the absence of oozing, and its usually very acute course. It is to be remembered, however, that eczema is an occasional sequel of miliaria.

Treatment.—Light clothing should be worn and woollen underwear should be avoided. The free use of a dusting powder, such as equal parts of talc and oxide of zinc or subcarbonate of bismuth, will usually suffice to afford relief in the average case. When the inflammatory symptoms are more marked, the frequent application of diluted alcohol or a saturated solution of boric acid in water, followed by a dusting powder, will be found useful. Internal treatment may in most cases be dispensed with; occasionally a mild saline laxative and acidulated drinks may be given with some benefit.

MILIARIA CRYSTALLINA

Synonyms.—Sudamina; Fr., Miliaire, Miliaire cristalline; Ger., Friesel.

Definition.—An acute non-inflammatory affection of the sweat-gland ducts characterized by an eruption of small, transparent vesicles.

Symptoms.—The eruption appears suddenly after profuse sweating as very small, pin-point to pin-head-sized, transparent, colorless vesicles, which, owing to their extremely thin walls, look like drops of dew sprinkled over the skin. It is usually most abundant upon the anterior surface of the trunk, particularly the abdomen and lower chest, but also occurs upon the neck and extremities. After a few days' duration the contents of the vesicles are absorbed and a scanty fine branny desquamation follows for a day or two. At no time are there any signs of hyperæmia or inflammation of the skin, or subjective symptoms of any moment.

Etiology and Pathology.—As a rule, to which there are very few exceptions, the eruption occurs in those suffering from some febrile disorder attended by sweating, such as typhoid fever, pneumonia, acute rheumatism, septic fever, pulmonary tuberculosis, and is frequently seen after the so-called "critical sweats."

All those who have studied the affection microscopically agree in placing the vesicles, which are in effect minute retention-cysts, in the horny layer of the epidermis, at the mouth of the sweat-duct (Robinson, Török, Unna, Coats). In all the vesicles examined by Török a sweat-duct opened into the bottom of the lesion. The nature of the obstruction leading to the retention of the sweat has not yet been altogether satisfactorily explained, but Török's explanation seems to be the most plausible one; he believes the mouth of the duct is obstructed by an accumulation of horny epithelial cells during the period of diminished or suppressed excretion of sweat during the febrile period which frequently precedes the critical sweating. Coats thinks it due to the formation of a plug of leucocytes of inflammatory origin, but it is very evident that he does not accurately distinguish between this affection and miliaria rubra, since he speaks of some of the vesicles after a time containing leucocytes and becoming minute abscesses.

Diagnosis.—The exquisitely transparent character of the vesicles, the complete absence of all symptoms of inflammation, and the intimate association of the eruption with profuse sweating, are symptoms so characteristic that an error in diagnosis is scarcely possible.

Prognosis and Treatment.—The affection is a trivial one, unaccompanied by any annoying symptoms, and usually terminates in a few days.

In many cases no treatment is required beyond the use of a dusting powder. If the affection is prolonged by repeated crops, a lotion of dilute alcohol may be used several times a day in conjunction with the dusting powder.

MILIARY FEVER

Synonyms.—Sudor Anglicus; Sweating sickness; Suette de Picardie; Suette miliaire; Ger., Schweissfriesel.

Definition.—An epidemic disease characterized by fever, profuse sweating, and an eruption resembling miliaria.

Symptoms.—This singular affection, about the history of which there is a great deal of uncertainty, first appeared in England in 1485, and remained limited to that country for more than half a century, five epidemics occurring between that date and 1551. It then spread to the Continent, where many epidemics of a similar, if not identical, disease have since occurred, particularly in France, Italy, and Germany, although it has never reappeared in England since the middle of the sixteenth century. An attack may be preceded by prodromal symptoms, such as headache, weakness of the lower extremities, and irritation of the skin, or it may appear suddenly without premonitory symptoms with chilliness, headache, fever with profuse sweating and a painful feeling of constriction of the chest and epigastrium, accompanied by dyspnœa, which in severe cases may be extreme and most distressing. After three or four days, and sometimes later, an erythematous eruption appears which may resemble the eruption of measles upon which vesicles develop shortly with transparent contents, which soon become turbid. Occasionally the eruption appears upon the mucous membranes of the mouth. The duration of the affection varies from two or three days in mild cases to eight or ten in the severe ones, and terminates with a more or less marked desquamation. The severity of the symptoms varies much in different epidemics; occasionally a fulminant form occurs, in which all the symptoms are greatly aggravated, and death takes place in a short time. The mortality varies from 8 or 9 per cent. to 20 or 30 per cent.

A remarkable feature of the disease is the very short duration of the epidemics, which last, as a rule, only a few weeks, and in some instances only a few days; during this short period many hundreds or thousands of cases may occur.

The cause is altogether unknown, but season exerts a very decided influence upon its incidence, since the large majority of epidemics have occurred during the summer and early autumn.

The treatment is to be conducted upon general principles, the cutaneous symptoms being of secondary importance.

GRANULOSIS RUBRA NASI

Definition.—An inflammatory affection of the nose, occurring for the most part in children, distinguished by redness, an eruption of small papules, and localized hyperidrosis.

Symptoms.—This disease was first recognized by Luithlen, who reported a case in 1900 as a peculiar form of acne accompanied by changes in the sweat-glands. A year later Jadassohn reported seven

cases, together with the results of the histological study of four of them, establishing its right to be regarded as a disease *sui generis*, and proposing for it the name by which it has since been known, *granulosis rubra nasi*. Other cases have since been reported by Herrmann, Pick, MacLeod, Little, and a few others.

It is confined to the lower portion of the nose, especially the tip and alæ, which is diffusely reddened and covered with a rather scanty eruption of small dark-red or brown-red papules and an occasional small pustule; the end of the nose is constantly moist with perspiration, which stands in small drops upon it. Occasionally hydrocystoma is associated with it, as in the cases reported by Pinkus, Lebet, and Jadassohn. It pursues a very chronic course, changing but little in appearance when once established. With the exception of occasional slight itching, there are no subjective symptoms.

Etiology and Pathology.—The affection is confined for the most part to children, who are usually anæmic, ill-nourished, or nervous. In a few instances it has been observed in adults; Pinkus has reported one in a man fifty-nine years old, Lebet one in an adult woman over thirty years of age; and the author has notes of a case occurring in a young woman twenty-two years of age.

The epidermis shows but little change, but characteristic alterations are present in the corium. The vessels of the upper and middle portion are dilated and surrounded in places by a cellular exudate composed of leucocytes, connective-tissue cells, with a few plasma cells and "mastzellen." The ducts of the sweat-glands are in places irregularly dilated and surrounded by a cellular exudate. The collagen and elastic tissue are but little altered.

Diagnosis.—The affection may be mistaken for acne rosacea, as was done in several of the earlier reported cases, but the youth of the patient and the presence of local hyperidrosis will serve to distinguish it from that affection. When the papules are well developed and numerous it may bear some resemblance to lupus vulgaris, but there are no intradermic nodules, and no tendency to infiltration and ulceration.

Treatment.—The treatment is very unsatisfactory. Astringent lotions and dusting powders afford some temporary relief. Among dusting powders, one containing from 25 to 50 per cent. of tannoform will be found one of the most useful. When the patient is anæmic or ill-nourished, as is often the case, he should be given iron or cod-liver oil, and should live outdoors as much as possible.

INDEX

Absence of secondary lesions, 36
Acantholysis bullosa, 190
Acanthosis, 30
  nigricans, 491
    definition, 491
    diagnosis, 492
    etiology, 492
    pathology, 492
    prognosis, 492
    symptoms, 491
    treatment, 493
Acare des follicules, 458
Acarus folliculorum, 458
  scabiei, 446
Acetanilid, 41, 216
Achromia congenita, 537
Acne, 693
  agminata, 708
  albida, 689
  artificialis, 705
    treatment, 706
  atrophica, 706
  concréte, 472
  frontalis, 706
  keloid, 673
  keratosa, 711
  miliaria, 689
  necrotica, 706
  paraffin, 706
  rodens, 706
  rosacea, 702
    definition, 702
    diagnosis, 703
    etiology, 702
    pathology, 703
    prognosis, 704
    symptoms, 702
    treatment, 704
  rosacée, 702
  sebacea, 681
  sebacée, 472
  simplex, 693
  urticata, 710
  varioliformis, 544, 706, 707
    definition, 706
    diagnosis, 708
    etiology, 707
    pathology, 708
    prognosis, 708
    symptoms, 707
    treatment, 708
Acne vulgaris, 693, 694, 697
    definition, 693
    diagnosis, 696
    etiology, 695
    lotion for, 699, 700
    mixture for, 698
    ointment for, 700
    paste for, 701
    pathology, 696
    prognosis, 696
    symptoms, 693
    treatment, 697
Acné decalvante, 668
  ponctuée, 686
  sebacée cornée, 477
Acneform inflammations, 710
Acnitis, 708
  diagnosis, 709
  etiology, 709
  pathology, 709
  prognosis, 710
  symptoms, 709
  treatment, 710
Acrodermatite suppurative, continué, 197
Acrodermatitis chronica atrophicans, 520
  hiemalis, 210
  perstans, 197
  pustulosa hiemalis, 210, 254
  urticarioides, 450
Acrodynia, 371
  definition, 371
  etiology, 372
  symptoms, 371
  treatment, 372
Actinomycose, 335
Actinomycosis, 335, 337
  definition, 335
  diagnosis, 337
  etiology, 336
  pathology, 336
  prognosis, 338
  symptoms, 335
  treatment, 338
Acute eczema, 138
  circumscribed eczema, 65
    arsenic in, 139
    early stages of, 139
    itching and burning, lotion for 140
    lotions, 140
  inflammations, 43

Acute inflammations, treatment of, 43
pemphigus, 179
duration of, 179
etiology, 180
symptoms, 179
Adenoma sebaceum, 557, 558
definition, 557
diagnosis, 558
etiology, 557
pathology, 558
prognosis, 559
symptoms, 557
treatment, 559
Adenomes sébacés, 557
Age, 25, 35
Agents, keratolytic, 47
keratoplastic, 47
Ainhum, 526
definition, 526
etiology, 526
pathology, 526
prognosis, 527
symptoms, 526
treatment, 527
Akne, 693
Aktinomykose, 335
Albinism, 537
Albinismus, 537
definition, 537
etiology, 538
pathology, 538
symptoms, 537
Aleppo boil, 344
Algidite progressive, 510
Alopecia, 655
adnata, 655
areata, 662, 663
definition, 662
diagnosis, 665
etiology, 664
lotion for, 667
ointment for, 667
pathology, 665
prognosis, 666
symptoms, 662
treatment, 666
cicatrisata, 668
circumscripta, 662
symptoms, 655
congenita, 655
definition, 655
etiology, 656
lotions for, 660, 661
orbicularis, 668
pathology, 656
prematura, 656
Alopecia prematuria idiopathica, 657
symptomatica, 657
etiology, 658
pathology, 658
prognosis, 659
treatment, 659
senilis, 656
symptomatology, 656
Alopécie, 655
congenitale, 655
innominée, 668
Alphos, 97
Alterations, objective, 17
qualitative, 33
quantitative, 33
Anæsthesia, 626
definition, 625
Anæsthetic leprosy, 316, 317
Anatomical wart, 249
Anatomy, 1
Angiokeratom, 489
Angiokeratoma, 29, 489
definition, 489
diagnosis, 490
etiology, 490
pathology, 490
prognosis, 490
symptoms, 489
treatment, 490
Angioma, 586
definition, 586
serpiginosum, 591
definition, 591
diagnosis, 592
etiology, 592
pathology, 592
prognosis, 593
symptoms, 591
treatment, 593
simplex, 587
Angioneurotic œdema, 65
Ani, eczema, 126
Anidrosis, 711
definition, 711
symptoms, 711
treatment, 711
Animal parasites, inflammations due to, 437
Ankylostomiasis cutis, 455
definition, 455
treatment, 456
Ankylostomum dermatitis, 455
Annulo-papular syphiloderm, 274
Anomaliæ pigmentationis, 530
Anomalies of pigmentation, 530
Anthrax, 230, 338
definition, 338

Anthrax, diagnosis, 339
etiology, 339
pathology, 339
prognosis, 340
simplex, 230
symptoms, 338
treatment, 340
Antifebrin, 216
Antipruritics and sedatives, 47
Antiseptics and parasiticides, 47
Antitoxin and other sera, 217
Anus, eczema of, 126, 147
Aplasia pilorum intermittens, 648
Appendages, diseases of, 634
Area Celsi, 662
Argyria, 538
Arrectores pilorum, 7
Arsenic, 40, 217
Arsenical keratosis, 215
pigmentation, 33, 217
Arzneiexantheme, 215
Asphyxie locale et gangrène symmetrique des extrémités, 204
Asteatodes, 680
Asteatosis, 680
definition, 680
symptoms, 680
treatment, 681
Astringents, 47
Atheroma, 691
Atrophia cutis idiopathica, 520
senilis, 522
definition, 522
pathology, 523
symptoms, 522
treatment, 523
pilorium propria, 645
striata et maculosa, 523
unguium, 635
etiology, 636
symptoms, 635
treatment, 637
Atrophies, 520
Atrophoderma neuriticum, 529
pigmentosum, 612
senilis, 522
striatum et maculatum, 523
Atrophy of the nails, 635
Auftreibung und Bersten der Haare, 646
Aussatz, 307
Autogenous vaccines, 42
Axilla, ringworm of, 416

Bacillus lepræ, 319
Baldness, 655
Balggeschwulst, 691
Barbæ, eczema, 124
Barbæ, trichophytosis, 410
Barbadoes leg, 514
Barley itch, 450
Bartfinne, 676
Bases, ointment, 144
Bastard measles, 391
Baths, 43
Bazin's disease, 257
Beard, eczema of, 124, 146
ringworm of, 410, 429
Beerschwam, 347
Benign cystic epithelioma, 551
miliary lupoid, 264
sarcoid, 572
Bird mite, 456
Biskra button, 344
Blackhead, 686
Blasenausschlag, 178
Bläschenflechte, 154
Blastomycetic dermatitis, 328
Blastomycose cutanée, 328
Blastomycosis cutis, 328, 329, 330, 331
definition, 328
diagnosis, 332
prognosis, 332
symptoms, 328
treatment, 332
Blattern, 373
Blebs, 19, 31
Blood-vessels, 4
Blutfleckenkrankheit, 461
Blutschwär, 227
Blutschweiss, 719
Blutschwitzen, 719
Bodies, molluscum, 550
Body, favus of, 399
ringworm of, 412, 414
Boil, 227
Bot-fly, 455
Botryomycose humaine, 234
Botryomycosis, 234
Boubas, 347
Bouton d'Alep, 344
Bowditch Island ringworm, 430
Brandschwär, 230
Breast, eczema of, 135
Paget's disease of, 611
Bromhidrosis, 717
Bromide eruption, 217, 218
Bromidrose, 717
Bromidrosis, 717
definition, 717
etiology, 717
pathology, 717
symptoms, 717
treatment, 718
Brown pigment, 4

Brown-tail moth dermatitis, 452
treatment, 452
Bucnemia tropica, 514
Bullous syphiloderm, 286
diagnosis, 286
Burrow of scabies, 447
Buttocks, Paget's disease of, 610

Cachexia thyropriva, 512
Cachexie pachydermique, 512
Callositas, 470
definition, 470
etiology, 470
pathology, 470
symptoms, 470
treatment, 470
Callosité, 470
Callosity, 470
Callus, 470
Calvities, 655
Cancer of the skin, 598
Cancroid, 598
Canities, 670
definition, 670
discoloration of the hair, 672
etiology, 671
pathology, 671
prognosis, 672
symptoms, 670
treatment, 672, 673
Caraate, 435
Caraté, 435
Carboncle, 230
Carbuncle, 230
Carbunculus, 230
definition, 230
diagnosis, 231
etiology, 230
pathology, 231
prognosis, 231
symptoms, 230
treatment, 231
Carcinoma cutis, 598
lenticulare, 602
tuberosum, 603
diagnosis, 605
etiology, 603
pathology, 604
plaster for, 607
prognosis, 606
treatment, 606
Carrion's disease, 350
Cascadöe, 430
Cathartics and laxatives, 39
Causes of diseases of the skin, 27, 28
Caustics, 47
Cell, plasma, 32
Cells, giant, 32
mast, 32
prickle, 3
rete mucosum, 3
touch, 6
Cerumen, 13
Chalazodermia, 518
Chancre, Hunterian, 268
Charbon, 338
Cheiropompholyx, 167
Cheloid, 566
Cheloïde, 566
Chicken louse, 456
Chickenpox, 393
Chigoe, 453
Chloasma, 531
definition, 531
diagnosis, 533
etiology, 532
pathology, 532
prognosis, 533
symptoms, 531
treatment, 533
Chloral, 219
Chromatophores, 7
Chromidrosis, 715
definition, 715
diagnosis, 716
etiology, 716
pathology, 716
prognosis, 716
symptoms, 715
treatment, 716
Chromophytosis, 540
Chronic eczema, 141
itching, lotion for, 141
liquor picis alkalinus, 143
ointments for, 142
palms and soles, 130
resorcin lotion for, 141
ointment for, 142
tar for, 142
leg ulcer, 148
ointment for, 149
pemphigus, 180, 181
symptoms, 180
Cicatrice, 570
Cicatrix, 570
definition, 570
etiology, 571
pathology, 571
symptoms, 570
treatment, 571
Cilia, 8
Cimex lectularius, 443
treatment, 443
Circinate papular syphiloderm, 273

Circinate squamous syphiloderm, 291
Circulation, lymphatic, 5
Circumscribed scleroderma, 506, 507
diagnosis, 509
etiology, 508
pathology, 508
prognosis, 509
symptoms, 506
treatment, 509
Clastothrix, 646
Clavus, 469
definition, 469
etiology, 469
pathology, 469
symptoms, 469
treatment, 469
Climate in relation to disease of skin, 24
Clothing and food, 25
Clou de Biskra, 344
de Gafsa, 344
Coccogenic sycosis, 676
Cochin-China leg, 514
Cod liver oil, 40
Coil-glands, 4
Cold, dermatitis form, 209
abscess of the skin, 259
-sore, 149
Colloid degeneration, 33
of skin, 584
definition, 584
diagnosis, 586
etiology, 585
pathology, 586
symptoms, 584
treatment, 586
milium, 584, 585
Colloidoma miliare, 584
Colored sweating, 715
Comedo, 686, 688
definition, 686
diagnosis, 689
etiology, 687
pathology, 687
prognosis, 689
symptoms, 686
treatment, 689
Comedon, 686
Condyloma acuminatum, 503
definition, 503
diagnosis, 504
etiology, 504
pathology, 504
prognosis, 504
symptoms, 503
treatment, 504
Condylomata, flat, 287
Condylome acuminé, 503
Congelatio, 209
Congestions, 48
Copaiba, 219
Copra itch, 451
Cor, 469
Corium, 4
Corn, 469
Corne de la peau, 471
Corneum, stratum, 1
Cornification, 29
Cornu cutaneum, 471
definition, 471
etiology, 471
prognosis, 471
symptoms, 471
treatment, 471
humanum, 471
Corpuscles of Krause, 5
of Meissner and Wagner, 5
Pacinian, 4
tactile, 5, 6
of Vater, 5
Couperose, 702
Craw-craw, 460
treatment, 460
Creeping eruption, 458
Cretinoid œdema, 512
Crusts, 21
Cutaneous horn, 471
Cuticle of the hair, 8
Cuticula pili, 8
Cutis anserina, 7
blastomycosis, 328, 329, 330, 331
carcinoma, 598
cysticerus cellulosæ, 454
echinococcus, 458
endothelioma, 556
laxa, 518
leukæmia and pseudoleukæmia, 622, 623
osteoma, 579
pendula, 518
sarcoma, 616
trypanosomiasis, 372
tuberculosis miliaris, 256
verrucosa, 249, 250, 252
verticis gyrata, 518, 519
Cyst of the coil-ducts, 720
Cysticercus cellulosæ cutis, 454
diagnosis, 455

Darier's disease, 477, 480
Das Sklerödem, 511
Deep trichophytosis, 424
Degeneration, colloid, 33
fatty, 32
hyaline, 33

Degeneration, myxomatous, 33
Delhi boil, 344
Demodex folliculorum, 458
Dermalgie, 631
Dermamyiasis linearis migrans œstrosa, 458
Dermanysse des oiseaux, 456
Dermanyssus avium et gallinæ, 456
Dermatalgia, 631
diagnosis, 631
etiology, 631
prognosis, 631
symptoms, 631
treatment, 631
Dermatite exfoliatrice, 66
polymorphe douleureuse, 170
Dermatitis, 31, 207
a frigore, 209
artefacta, 221
atrophicans maculosa, 520
blastomycotica, 328
brown-tail moth, 452
bullosa hereditaria, 190
calorica, 208
chronica atrophicans, 520
definition, 520
diagnosis, 522
etiology, 522
pathology, 522
prognosis, 522
symptoms, 520
treatment, 522
congelationis, 209
contusiforme, 55
exfoliativa, 66, 68
definition, 66
diagnosis, 70
epidemica, 71
diagnosis, 73
etiology, 72
pathology, 72
prognosis, 73
symptoms, 72
treatment, 73
etiology, 69
neonatorum, 76
definition, 76
diagnosis, 77
etiology, 76
pathology, 76
prognosis, 77
symptoms, 76
treatment, 77
pathology, 70
prognosis, 71
symptoms, 67
treatment, 71
Dermatitis factitia, 221, 222
definition, 221
diagnosis, 223
etiology, 223
symptoms, 221
treatment, 224
gangrænosa, 200
adultorum, 202
etiology, 203
pathology, 203
prognosis, 203
symptoms, 202
treatment, 203
diabeticorum, 203
infantum, 200
diagnosis, 201
etiology, 201
pathology, 201
prognosis, 201
symptoms, 200
treatment, 201
symmetrica, 204
definition, 204
diagnosis, 206
etiology, 205
pathology, 206
prognosis, 206
symptoms, 204
treatment, 206
herpetiformis, 170, 172, 173
definition, 170
diagnosis, 175
etiology, 174
pathological anatomy, 174
pathology, 174
prognosis, 175
symptoms, 170
treatment, 176
medicamentosa, 215
papillaris capillitii, 673, 674, 675
definition, 673
diagnosis, 675
etiology, 674
pathology, 674
prognosis, 676
symptoms, 673
treatment, 676
pellagrous, 370
psoriasiformis nodularis, 110
repens, 197, 198
definition, 197
diagnosis, 198
etiology, 197
pathology, 197
prognosis, 198
symptoms, 197
treatment, 198

Dermatitis scarlatiniformis recidivans, 73
seborrhœica, 149
definitions, 149
diagnosis, 153
etiology, 152
lotion for, 154
pathology, 152
prognosis, 153
symptoms, 149
treatment, 154
traumatica, 207
vegetans, 199
venenata, 211, 213
definition, 211
diagnosis, 214
etiology, 212
pathology, 214
prognosis, 214
symptoms, 211
treatment, 214
Dermatolysis, 518
symptoms, 518
Dermatomycosis furfuracea, 540
Dermatomyoma, 577
definition, 577
diagnosis, 578
etiology, 578
pathology, 578
prognosis, 578
symptoms, 577
treatment, 578
Dermatophilus penetrans, 453
Dermatoses, drug, 215
Dermatosis Kaposi, 612
Desquamation, 74
Desquamative scarlatiniform erythema, 73
Diabetes, saccharine, 26
Diabetic gangrene, 203
etiology, 204
treatment, 204
Diagnosis, general, 35
Diet, 38
Diffuse idiopathic atrophy of the skin, 520
scleroderma, 505
Diphtheria of the skin, 206
Disease, Darier's, 480
of the ductless glands, 27
history of, 36
of the liver, 26
Paget's, 607, 608
Raynaud's, 204
Diseases of the appendages, 634
of the hair and hair follicles, 642
of the nails, 634
parasitic, 135
Diseases of the sebaceous glands, 680
of the sweat-glands, 711
Dracontiasis, 456
definition, 456
etiology, 457
pathology, 457
symptoms, 456
treatment, 457
Dracunculus medinesis, 456
Drug dermatoses, 215
definition, 215
diagnosis, 220
etiology, 220
pathology, 220
prognosis, 221
symptoms, 215
treatment, 221
eruptions, 215
Ductless glands, 41
disease of, 27
Dusting powders, 44
Dysidrosis, 167
Dystrophie papillaire et pigmentaire, 491

Ears, eczema of, 124, 145
Echinococcus cutis, 458
Ecthyma, 226
definition, 226
diagnosis, 227
etiology, 226
pathology, 227
symptoms, 226
térébrant, 200
treatment, 227
Eczema, 116, 135
acute, 138
ani, 126
of the anus, 126, 147
lotion for, 148
aurium, 124
barbæ, 124
of the beard, 146
of the breast, 125, 135
capitis, 123
chronic, 141, 142
craquile, 122
definition, 116
diagnosis, 132
of the ears, 124, 145
erythematosum, 119
erythematous, 119
etiology, 126
external causes, 128
of the face, infantile, 144
faciei, 123
fissum, 122
of the genitalia, 125, 147

Eczema, genitalium, 125
of the hands, 124, 146
legs, 148
of the lids, 145
mammarum, 125
manuum, 124
of the margin of the lids, 146
medicinal treatment of, 138
of the nails, 125
of the nipple and areola, 147
palpebrarum, 124
papular, 120
papulosum, 120
pathology, 129
pigmentation in, 131
prognosis, 136
pustular, 121, 133, 134
pustulosum, 121
regional forms of, 123
rubrum, 121, 126, 131
of the scalp, 144
ointment bases for, 144
scaly, 121, 134
sclerosum, 123, 132
of the scrotum, 147
seat of, 123
seborrhœicum, 149, 682
squamosum, 121
squamous, 134
subacute, 143
symptoms, 117
treatment, 136
unguium, 125
verrucosum, 123
vesicular, 119, 130, 133
vesiculosum, 119
Eczemas of infancy, 143
Ehrmann, melanoblasts of, 34
Eiterblase, 226
Ekthyma, 226
Ekzem, 116
Eleidin, 2
Elephant leg, 514
Elephantiasis, 514
arabum, 514
definition, 514
diagnosis, 517
etiology, 516
græcorum, 307
pathology, 516
prognosis, 517
symptoms, 514
treatment, 517
Endothelioma capitis, 556
cutis, 556
etiology, 556
pathology, 556
Endothelioma cutis, symptoms, 556
treatment, 557
l'Endurcissement athrepsique, 510
Energy, radiant, 47
Entozoön folliculorum, 458
Ephelide, 530
Ephelis, 530
Ephidrosis, 711
cruenta, 719
discolor, 715
tincta, 715
Epidemic eczema, 71
Epidermis, 1, 29
spiral portion of sweat-gland in, 13
Epidermolysis bullosa hereditaria, 190
definition, 190
diagnosis, 191
etiology, 190
pathology, 190
prognosis, 191
symptoms, 190
treatment, 191
Epidermophyton inguinale, 422
Epithelial cancer, 598
Epithelioma, 29, 598, 599
adenoides cysticum, 551
baso-cellulare, 605
definition, 598
(molluscum) contagiosum, 544, 545, 546, 547, 548, 549, 551
definition, 544
diagnosis, 549
etiology, 545
pathology, 547
prognosis, 550
symptoms, 544
treatment, 550
morphœa-like, 600, 601
Epitheliomatose pigmentaire, 612
Epitheliome kystique bénin, 553
Eponychium, 13
Equinia, 340
definition, 340
diagnosis, 342
etiology, 341
pathology, 341
prognosis, 342
symptoms, 340
treatment, 342
Erbgrind, 398
Ergot, 219
Erntemilbe, 452
Eruptions, 17, 22
bromide, 217, 218
chronique circinée de la main, 572
medicamenteuses, 215

Eruptions, vaccinal, 381
Erysipelas, 231
definition, 231
diagnosis, 233
etiology, 232
pathology, 232
perstans faciei, 361
prognosis, 233
symptoms, 231
treatment, 233
Erysipeloid, 233
definition, 233
diagnosis, 234
etiology, 234
pathology, 234
prognosis, 234
symptoms, 234
treatment, 234
Erythema, 48
ab igne, 48, 49
caloricum, 48
contusiforme, 55
elevatum diutinum, 572
exsudativum multiforme, 51
induratum, 257, 258
definition, 257
diagnosis, 259
etiology, 258
pathology, 258
symptoms, 257
treatment, 259
intertrigo, 50
migrans, 233
multiforme, 51, 52
definition, 51
diagnosis, 54
erythema iris, 53
etiology, 53
pathology, 54
prognosis, 55
symptoms, 51
treatment, 55
nodosum, 55
definition, 55
diagnosis, 57
etiology, 56
pathology, 57
prognosis, 57
symptoms, 55
treatment, 57
pernio, 49
scarlatiniforme, 73
definition, 73
diagnosis, 75
etiology, 75
pathology, 75
symptoms, 73
Erythema scarlatiniforme, treatment, 75
scarlatinoides, 73
serpens, 233
simplex, 48
solare, 48
traumaticum, 49
venenatum, 49
Erythemata, idiopathic, 48
symptomatic, 48
Erythemato-sclerose du dos des mains, 572
Erythematous eczema, 119
syphiloderm, 270, 271
diagnosis, 271
Erythème centrifuge, 357
endémique, 367
épidémique, 371
induré des scrofuleux, 257
multiforme, 51
noueux, 55
Erythrasma, 434
definition, 434
diagnosis, 434
etiology, 434
pathology, 434
symptoms, 434
treatment, 435
Erythroderma exfoliante (Besnier), 66
Erythrodermie pityriasique en plaques disseminées, 110
Erythromelalgia, 632
definition, 632
diagnosis, 633
etiology, 632
pathology, 632
prognosis, 633
symptoms, 632
treatment, 633
Espundia, 346
Etiology, general, 24
Eucerin, 45
Examination of patient, 35
Exanthemata, 373
Excoriations, 21
External remedies, therapeutic effect of, 43
root-sheath, 9
treatment, 42
Exudationes, 51

Farcy, 340
Fat-lobules, 4
Fatty degeneration, 32
substances, 44
tumor, 575
Favus, 398, 400, 402, 403
body, 399

Favus, definition, 398
diagnosis, 404
etiology, 401
prognosis, 406
scalp, 399
symptoms, 398
treatment, 405
Feigned eruptions, 221
Fettsclerem, 510
Feuermal, 587
Fever blister, 149
miliary, 724
Fibres, elastic, 32
Fibroma, 562
definition, 562
durum, 564
hard, 564
lipomatodes, 580
molluscum, 563
diagnosis, 565
etiology, 564
pathology, 565
prognosis, 565
symptoms, 563
treatment, 566
Filaria meddinensis, 456
Finnen, 693
Fischschuppenausschlag, 493
Fish-skin disease, 493
Fissura pilorum, 645
Fissures, 21
Flat condylomata, 287
Flea, 443
Fleckenmal, 593
Follicle, hair, 9
Folliclis, 254
Follicular vegetating psorospermosis, 30
Folliculitis barbæ, 676
decalvans, 668
definition, 668
diagnosis, 669
etiology, 668
lotion for, 669
ointment for, 669
pathology, 668
prognosis, 669
symptoms, 668
treatment, 669
exulcerans, 254
nuchæ sclerotisans, 673
Folliculorum, demodex, 458
Food and clothing in relation to diseases of skin, 25
Foot, perforating ulcer of, 527
Foreign sera, 42
Fragilitas crinium, 645
definition, 645
Fragilitas crinium, etiology, 646
pathology, 646
symptoms, 645
treatment, 646
Frambœsia, 347
definition, 347
diagnosis, 349
etiology, 349
pathology, 349
prognosis, 350
symptoms, 347
treatment, 350
Freckles, 530
Fressende Flechte, 236
Friesel, 723
Frieselausschlag, 721
Fungus foot of India, 342
Furfur, microsporon, 542
Furoncle, 227
Furuncle, 227
Furunculus, 227
definition, 227
diagnosis, 229
etiology, 228
pathology, 228
prognosis, 229
symptoms, 227
treatment, 229
Furunkel, 227

Gad-fly, 455
Gale, 444
Gangosa, 352
definition, 352
diagnosis, 353
etiology, 353
pathology, 353
prognosis, 353
symptoms, 352
treatment, 353
Gangrene, 200
diabetic, 203
infectious, multiple, 202
Gastro-intestinal disease, relationship to disease of the skin, 26
Gefässmal, 587
Gemeiner Floh, 443
General diagnosis, 35
etiology, 24
pathology, 29
symptomatology, 17
therapeutics, 38
acetanilid, 41
acute inflammations, treatment of, 43
antimony, 41
antipyrin, 41

General therapeutics, antiseptics and parasiticides, 47
arsenic, 40
astringents, 47
autogenous vaccines, 42
baths, 43
caustics, 47
cod liver oil, 40
diet, 38
ductless glands, 41
dusting powders, 44
eucerin, 45
external remedies, therapeutic effect of, 43
treatment, 42
fatty substances, 44
foreign sera, 42
glycerin, 46
hypodermatic injections, 42
injections of serum, 42
internal remedies, 38
treatment, 39
iodides of sodium and potassium, 40
iron, preparations of, 39
keratolytic agents, 47
keratoplastic agents, 47
laxatives and cathartics, 39
lotions or washes, 44
mercury, 40
occupation, 39
ointments and lotions, application of, 43
soothing and protective, 45
paste, Lassar's, 45
pastes, 45, 46
patient's clothing, 39
occupation, 39
phenacetin, 41
phenol, 41
plasters, 46
protectives, 47
quinine, 40
radiant energy, 47
salves or ointments, 44
sedatives and antipruritics, 47
soaps, 46
sulphur, 4
vaccine treatment, 42
varnishes, 46
Genitalia, eczema of, 125, 147
Genitalium, eczema, 125
German measles, 391
Germinativum, stratum, 3
Giant-cell, blastomycetes in, 330
Giant-cells, 32
Giant urticaria, 65
Gland, sweat-, 12
Glanders, 340
Glands, 11
coil, 4
ductless, disease of, 27
of Moll, 12
sebaceous, 10, 14
sweat-, 4
Glossy fingers, 529
skin, 529
definition, 529
etiology, 529
pathology, 529
prognosis, 529
symptoms, 529
treatment, 529
Glycerin, 46
Gomme scrofulo-tuberculeuse, 259
Grain itch, 450
definition, 450
diagnosis, 451
etiology, 451
pathology, 451
symptoms, 450
treatment, 451
Granular layer, 2
Granules, pigment, 34
Granuloma annulare, 572, 573
definition, 572
diagnosis, 574
etiology, 574
pathology, 574
prognosis, 574
symptoms, 573
treatment, 574
fungoides, 323, 324
definition, 323
diagnosis, 327
etiology, 326
pathology, 326
prognosis, 327
treatment, 327
inguinale tropicum, 354
definition, 354
diagnosis, 354
etiology, 354
pathology, 354
prognosis, 355
symptoms, 354
treatment, 355
pediculatum, 234
pyogenicum, 234, 235
definition, 234
diagnosis, 235
etiology, 235
pathology, 235
prognosis, 235

Granuloma pyogenicum, symptoms, 234
treatment, 235
telangiectodes, 234
Granulomata, infectious, 236
Granulosis rubra nasi, 724
definition, 724
diagnosis, 725
etiology, 725
pathology, 725
symptoms, 724
treatment, 725
Gray hair, 670
Groin, ulceration of, 354
Ground itch, 455
Growths, new, 544
Grutum, 689
Grützbeutel, 691
Guinea-worm, 456
Gumma, 293
diagnosis, 294
Gummatous syphiloderm, 293
Gune, 430
Gürtelausschlag, 158
Gürtelrose, 158
Gutta rosea, 702

Haarbalgmilbe, 458
Habits in relation to diseases of skin, 36
Hæmangioendothelioma tuberosum multiplex, 553
Hæmathidrosis, 719
Hæmatidrosis, 719
definition, 719
diagnosis, 719
etiology, 719
pathology, 719
prognosis, 720
symptoms, 719
treatment, 720
Hæmidrosis, 719
Hæmorrhœa petechialis, 461
Hæmosiderin, 34
Hair, 8
bulb, 8
cuticle of, 8
discoloration of, 672
follicle, 9
follicles and smooth muscles of scalp, 11
and hair follicles, diseases of, 642
ringed, 671
Hairy nævus, 594
Hands, eczema of, 124, 146
Harlequins fœtus, 496
Harnschweiss, 718
Harvest bug, 452
Hautblastomykose, 328
Hauthorn, 471
Heat, dermatitis from, 208
Hefenmykose, 328
Helodermia simplex et annularis, 572
Hématidrose, 719
Hemorrhages, 461
Hemorrhagiæ, 461
Hemorrhagica, purpura, 462
Henle, layer of, 9
Hennoch's purpura, 462
Heredity, 24
Herpes, 133, 154
circinatus bullosus, 170
desquamans, 430
facial, 157
gestationis, 170
simplex, 154
definition, 154
diagnosis, 157
etiology, 156
facialis, 155
herpes facialis, 154
herpes progenitalis, 155
pathology, 156
prognosis, 157
symptoms, 154
treatment, 157
tonsurans maculosus, 112
vulgaire, 149
zoster, 158, 161, 164
arsenicalis, 162
definition, 158
diagnosis, 164
etiology, 162
pathology, 163
prognosis, 164
symptoms, 158
treatment, 164
Herxheimer's spirals, 3
Hidrocystoma, 720
definition, 720
diagnosis, 721
etiology, 721
pathology, 721
symptoms, 720
treatment, 721
Hirsuties, 642
Hives, 58
Hoariness, 670
Holzbock, 454
Honeycomb ringworm, 398
Horny layer, 15
Hühnerauge, 469
Hunterian chancre, 268
Huxley, layer of, 9
Hyaline degeneration, 33

Hyaloma, 584
Hydradenitis destruens suppurativa, 708
Hydradenomes eruptifs, 553
Hydroa æstivalis, 165
bulleux, 170
herpetiformis, 170
vacciniformis, 165
definition, 165
diagnosis, 166
etiology, 166
pathology, 166
prognosis, 166
symptoms, 165
treatment, 166
Hydrocystoma, 720
Hyperæmiæ, 48
Hyperæsthesia, 625
definition, 625
Hyperidrose, 711
Hyperidrosis, 711
definition, 711
etiology, 713
pathology, 713
prognosis, 714
symptoms, 712
treatment, 714
Hyperkeratose figurée centrifuge atrophiante, 487
Hyperkeratosis, 29
excentrica, 487
Hyperpigmentation, 33
Hypertrichosis, 642
definition, 642
depilatory for, 644
etiology, 643
pathology, 643
symptoms, 642
treatment, 644
Hypertrophia pilorum, 642
Hypertrophiæ, 469
Hypertrophic scar, 568
Hypertrophies, 469
Hypertrophy, 29
Hypodermatic injections, 42
Hyponomoderma, 458
Hypotrichosis, 655

Ichthyose, 493
Ichthyosis, 493, 495
congenita, 496
diagnosis, 497
etiology, 496
pathology, 497
prognosis, 498
treatment, 498
definition, 493
follicularis, 496
Ichthyosis hystrix, 496
palmaris et plantaris, 482
sebacea, 496
simplex, 494
symptoms, 493
vera, 493
Idiosyncrasy, 25
Idrosis, 711
Impetigo, 194
Brockhart's, 194
contagiosa, 191, 192
circinata, 193
definition, 191
diagnosis, 196
etiology, 195
pathology, 195
prognosis, 196
symptoms, 191
treatment, 196
herpetiformis, 177
definition, 177
diagnosis, 178
etiology, 177
pathology, 177
prognosis, 178
symptoms, 177
treatment, 178
Induratio telæ cellulosæ, 510
Infancy, eczema of, 143
Infantile eczema of the face, 144
paste for, 144
gangrenous ecthyma, 200
Infectious granulomata, 236
multiple gangrene, 202
Infective angioma, 591
Inflammations, 51
acneform, 710
due to animal parasites, 437
due to vegetable parasites, 398
Inflammatory fungoid neoplasm, 323
Injections, hypodermatic, 42
intracutaneous, 37
of sera, 42
Inner root-sheath, 9
Internal remedies, 38
treatment, 39
Intertrigo, 50
Intracellular œdema, 31
Intracutaneous injection, 37
Iodides and iodine, 219
of sodium and potassium, 40
Iodine, 427
and the iodides, 219
Iron, preparations of, 39
Itch, 444
copra, 451
grain, 450

Itching, 23, 626
Ixodes, 454

Jigger, 453
Juckblattern, 77

Kahlheit, 655
Karbunkel, 230
Keloid, 566, 567, 569
of Alibert, 566
definition, 566
diagnosis, 570
etiology, 568
pathology, 569
prognosis, 570
symptoms, 566
treatment, 570
Keratodermia blennorrhagica, 486
Keratodermie blennorrhagique, 486
palmaire et plantaire, 482
symmetrique héréditaire, 482
Keratohyalin, 2
Keratolysis neonatorum, 76
Keratolytic agents, 47
Keratoma, 470
senile, 472
Keratoplastic agents, 47
Keratose blennorrhagique, 486
Keratosis, arsenical, 215
blennorrhagica, 486
definition, 486
diagnosis, 487
etiology, 487
pathology, 487
prognosis, 487
symptoms, 486
treatment, 487
follicularis, 477, 478, 479
contagiosa, 481
diagnosis, 482
etiology, 482
pathology, 482
treatment, 482
definition, 477
diagnosis, 481
etiology, 479
pathology, 479
prognosis, 481
symptoms, 477
treatment, 481
nigricans, 491
palmæ et plantæ, 482
definition, 482
diagnosis, 485
etiology, 485
pathology, 485
prognosis, 486
Keratosis palmæ et plantæ, symptoms, 482
treatment, 486
of the palms and soles, 483
pilaris, 475
definition, 474
diagnosis, 476
etiology, 475
pathology, 476
symptoms, 474
treatment, 476
senilis, 472, 473
definition, 472
diagnosis, 474
etiology, 473
pathology, 474
prognosis, 474
symptoms, 472
treatment, 474
of the soles, 484
suprafollicularis, 474
vegetans, 477
Kleienflechte, 540
Knotenerythem, 55
Krätze, 444
Kraurosis vulvæ, 525
definition, 525
etiology, 525
pathology, 525
prognosis, 526
symptoms, 525
treatment, 526
Krause, corpuscles of, 5
Kupferfinne, 702
Kupferose, 702
Kyste sebacé, 691

La lepre, 307
rose, 231
Lanugo, 8
Larva migrans, 458, 459
definition, 458
etiology, 459
pathology, 459
symptoms, 459
treatment, 460
Lausesucht, 437
Laxatives and cathartics, 39
Layer of Henle, 9
horny, 15
of Huxley, 9
Leg ulcer, chronic, 148
Legs, eczema of, 148
Leichdorn, 469
Leiomyoma, 577
Lentigo, 530
definition, 530

Lentigo, etiology, 530
pathology, 530
symptoms, 530
treatment, 531
Lentille, 530
Lepothrix, 653, 654
definition, 653
symptoms, 653
treatment, 655
Lepra, 97, 307
anæsthetica, 312
definition, 307
maculo-anæsthetic, 313, 315
nervorum, 312
symptoms, 312
symptoms, 308, 309
tuberosa, 308
symptoms, 308
Lepræ, bacillus, 319
Leprosy, 307
anæsthetic, 316
complete, 318
macular, 314
mixed, 318
Leptus, 453
Lesions, primary, 17
character of, 36
secondary, 20
absence of, 36
presence of, 36
Leukæmia and pseudoleukæmia cutis, 622, 623
diagnosis, 624
etiology, 624
pathology, 624
treatment, 624
Leukasmus acquisitus, 534
Leukoderma, 534
congenita, 537
Leukopathia, 534
congenita, 537
Lichen annularis, 83, 572
nitidus, 90
diagnosis, 90
etiology, 90
pathology, 90
symptoms, 90
treatment, 90
obtusus corneus, 80
pilaris, 474
spinulosus, 476
diagnosis, 477
etiology, 476
pathology, 476
treatment, 477
planus, 81, 82, 85, 86, 88
definition, 81
Lichen planus, diagnosis, 88
discoides, 84
etiology, 87
lotion for, 89
papules of, 133
pathology, 87
prognosis, 89
symptoms, 82
treatment, 89
psoriasis, 81
ruber, 93
acuminatus, 93
planus, 81
scrofulosorum, 261, 262
definition, 261
diagnosis, 263
etiology, 262
pathology, 262
symptoms, 261
treatment, 263
scrofulosus, 261
simplex chronicus, Vidal, 91, 92
definition, 91
diagnosis, 92
etiology, 91
pathology, 91
prognosis, 92
symptoms, 91
treatment, 92
tropicus, 721
variegatus, 110
Lichenification, 91
Lids, eczema of, 145
the margin of, 146
Linsenflecke, 530
Linsenmal, 593
Liodermia essentialiscum melanosi et telangiectasia, 612
neuritica, 529
Lipoma, 575, 576
definition, 575
diagnosis, 577
etiology, 576
pathology, 576
prognosis, 577
symptoms, 575
treatment, 577
Liver, disease of, in relation to diseases of the skin, 26
spots, 531
Local asphyxia, 204
Lombardy leprosy, 367
Loose skin, 518
Lotion, Kummerfeld's, 699
Lotions, hair, 660, 661
or washes, 44
Loupe, 691

Lousiness, 437
Lucidum, stratum, 2
Lumpy jaw, 335
Lunula, 13
Lupoid sycosis, 668, 678
Lupus erythemateux, 357
disseminé, 254
erythematodes, 357
erythematosus, 357, 358, 359, 364
definition, 357
diagnosis, 363
etiology, 361
pathology, 362
prognosis, 364
scalp, 360
symptoms, 358
treatment, 365
exedens, 236
hypertrophicus, 240
lymphaticus, 559
sclerosus, 249
tuberculeux, 236
verrucosus, 249
vorax, 236
vulgaire, 236
vulgaris, 236, 237, 238, 239, 240, 242
complications, 241
Cosme's paste, form of, for, 247
definition, 236
diagnosis, 244
etiology, 241
local treatment, 246
pathology, 243
pyrogallol ointment for, 247
sequelæ, 241
symptoms, 237
treatment, 245
Lymphadénie cutanée, 323
Lymphangiectasis, 489
Lymphangiectodes, 559
Lymphangioma, 559, 560
capillaire varicosum, 559
cavernosum, 559
circumscriptum, 559, 561
definition, 559
diagnosis, 561
etiology, 560
pathology, 561
prognosis, 562
symptoms, 559
treatment, 562
definition, 559
superficiale simplex, 559
tuberosum multiplex, 553
Lymphatic circulation, 5
Lymphomatose cutanée generalisée, 323
Macular leprosy, 314
Macules, 17
Maculo-anæsthetic, lepra, 313, 315
Madura foot, 342
Madurafuss, 342
Mal de la rosa, 367
del pinto, 435
del sole, 367
des pieds et des mains, 371
perforant du pied, 527
Malignant papillary dermatitis, 607
Malum perforans pedis, 527
Masern, 388
Mast cells, 32
Matrix, 13
Mattress itch, 450
Measles, 388
definition, 388
diagnosis, 391
etiology, 390
pathology, 390
prognosis, 391
symptoms, 388
treatment, 391
Medulla of hair, 8
Meibomian glands, 11
Meissner and Wagner, corpuscles of, 5
Melanin, 4, 34
origin of, 7, 33
Melanoblasts of Ehrmann, 34
Melanoderma, 531
Melanosis lenticularis progressiva, 612
Melanotic sarcoma, 617
Melasma, 531
Membrana propria, 10
Meralgia paræsthetica, 633
definition, 633
Mercury, 40
ammoniated, 427
and its salts, 219
Microsporon dispar, 114
furfur, 542
Migrans, larva, 458, 459
Miliaire, 721
cristalline, 723
Miliaria, 721
alba, 721
crystallina, 723
definition, 723
diagnosis, 723
etiology, 723
pathology, 723
prognosis, 723
symptoms, 723
treatment, 723
definition, 721
etiology, 722

Miliaria, pathology, 722
prognosis, 722
rubra, 721
symptoms, 721
treatment, 722
Miliary fever, 724
definition, 724
symptoms, 724
papular syphiloderm, 276
pustular syphiloderm, 278, 279, 280, 281
Miliary tuberculosis of the skin, 256
Milium, 689
colloid, 585
definition, 690
diagnosis, 691
etiology, 690
pathology, 690
prognosis, 691
symptoms, 690
treatment, 691
Milzbrand, 338
Mistura ferri acida, 698
Mitesser, 686
Mixed leprosy, 318
diagnosis, 320
etiology, 318
pathology, 319
prognosis, 321
treatment, 322
Moist papules, 286
wart, 503
Mole, 593
Moll, glands of, 12
Molluscum bodies, 550
cholesterique, 580
contagiosum, 544
epitheliale, 544
fibrosum, 563
pendulum, 563
sebaceum, 544
simplex, 563
Monilethrix, 648, 649, 650
definition, 648
diagnosis, 651
etiology, 650
pathology, 650
prognosis, 651
symptoms, 649
treatment, 651
Morbi appendicium, 634
Morbilli, 388
Morbus pedicularis, 437
Morphine, opium and, 219
Morphœa-like epithelioma, 600, 601
Morve, 340
Multiforme, erythema, 51, 52, 53
Multiple benign sarcoid (Boeck), 264, 266
definition, 264
diagnosis, 267
epithelioma of the scalp, 556
etiology, 265
pathology, 265
prognosis, 267
symptoms, 264
treatment, 267
cachectic gangrene of the skin, 200
gangrene, infectious, 202
of the skin, 203
pigmented hemorrhagic sarcoma, 620
tumors of the skin, 80
ulcerating syphilitic gummata, 294
Muscles, 6
striped, 6
unstriped, 7
Mycetoma, 342
definition, 342
diagnosis, 344
etiology, 343
pathology, 343
prognosis, 344
symptoms, 343
treatment, 344
Mycetome, 342
Mycosis fungoides, 323
Myom, 577
Myoma, 577
levicellulare, 577
Myome, 577
Myxœdem, 512
Myxœdema, 512
definition, 512
diagnosis, 513
etiology, 513
pathology, 513
prognosis, 513
symptoms, 512
treatment, 514
Myxœdème, 512
Myxomatous degeneration, 33

Nævi vasculaires et papillaires, 557
Nævocarcinoma, 602
Nævus cystepitheliomatosus, 553
flat, smooth pigmented, 596
hairy, 594
lupus, 591
pigmentaire, 593
pigmentosus, 593
definition, 593
diagnosis, 597
etiology, 595

Nævus pigmentosus, pathology, 595
prognosis, 597
symptoms, 593
treatment, 597
sanguineus, 587
unius lateris, 595, 597
vasculaire, 587
vascularis, 587, 588
definition, 587
diagnosis, 589
etiology, 588
pathology, 588
prognosis, 589
treatment, 589
vasculosus, 587
Nail bed, 13
fold, 13
ringworm of, 640
substance, 14
Nails, 13
diseases of, 634
eczema of, 125
ringworm of, 641
syphilis of, 638
Narbe, 570
Nasi, granulosis rubra, 724
Nässende Flechte, 116
Neonatorum, œdema, 511
sclerema, 510
Neoplasie circinée et nodulaire, 572
Neoplasmata, 544
Nerve tumor, 578
Nerves, 5
Nervorum, lepra, 312
Nessel-ausschlag, 58
Nesselsucht, 58
Nettlerash, 58
Neuralgia of the skin, 631
Neurofibroma, 563
Neurom, 578
Neuroma, 578
definition, 578
diagnosis, 579
etiology, 579
pathology, 579
treatment, 579
Neuroses, 625
Nevrodermite circonscrite, 91
Nevrome, 578
New growths, 544
Nitrate, silver, 219
Nodosité des poils, 648
Nodular syphiloderm, 288, 290, 291
diagnosis, 290
Nodules, 20
Non-hairy parts, ringworm of, 429
Objective alterations, 17
symptoms, 17
Occupation in relation to diseases of skin, 25, 30
Œdema angioneuroticum, 65
definition, 65
diagnosis, 66
etiology, 66
pathology, 66
prognosis, 66
symptoms, 65
treatment, 66
intracellular, 31
neonatorum, 511
definition, 511
diagnosis, 512
etiology, 511
pathology, 512
prognosis, 512
symptoms, 511
treatment, 512
of the newborn, 511
Œdeme des nouveaunés, 511
Œil de perdrix, 469
Œstrus, 455
treatment, 455
Oil, cod liver, 40
Ointment for eczema of the lids, 145
hair, 661, 662
or lotion, application of, 43
sulphur, 669
Ointments or salves, 44
soothing and protective, 45
Oligotrichosis, 655
Onychatrophia, 635
Onychauxis, 634
definition, 634
etiology, 635
symptoms, 634
treatment, 635
Onychia, 637
definition, 637
etiology, 638
symptoms, 637
treatment, 639
Onychitis, 637
Onychogryphosis, 635
Onychomycosis, 639, 640
definition, 639
diagnosis, 641
prognosis, 641
symptoms, 639
treatment, 641
Opium and morphine, 219
Oriental boil, 344
sore, 344, 345
definition, 344

Oriental sore, diagnosis, 346
etiology, 345
pathology, 346
symptoms, 344
treatment, 346
Orientbeule, 344
Origin of melanin, 7, 33
Oroya fever, 350
Osmidrosis, 717
Osteoma cutis, 579
Osteosis cutis, 579
Ovum pediculus capitus, 439

Pachydermatocele, 518
Pachydermia, 514
Pacinian corpuscles, 4
Paget's disease, 607, 608
of the breast, 611
of the buttocks, 610
definition, 607
diagnosis, 612
etiology, 610
pathology, 610
prognosis, 612
symptoms, 608
treatment, 612
Pain, 23
Palm, scaly eczema of, 146
Palmæ et plantæ, keratosis, 482
Palms and soles, keratosis of, 483
Panniculus adiposus, 4
Papilla of hair, 10
Papillæ, 5
Papular eczema, 120
syphiloderm, 272
diagnosis, 277
Papules, 18
of lichen planus, 133
moist, 286
Papulo-necrotic tuberculide, 254
definition, 254
diagnosis, 255
etiology, 255
pathology, 255
prognosis, 256
symptoms, 254
treatment, 256
Papulo-pustular syphiloderm, 284
Paraffin acne, 706
Paraffinoma, 575
definition, 575
diagnosis, 575
pathology, 575
symptoms, 575
treatment, 575
Parakeratosis, 30
variegata, 110
Paranghi, 347
Parapsoriasis, 110
definition, 110
diagnosis, 112
etiology, 111
pathology, 111
prognosis, 112
symptoms, 111
treatment, 112
Parasitic diseases, 135
Parasiticides and antiseptics, 47
Pars papillaris, 4
reticularis, 4, 34
Paste, Lassar's, 45
for infantile eczema of the face, 144
Pastes, 45, 46
Pathology, general, 29
Patient's clothing in relation to diseases of skin, 39
occupation in relation to diseases of skin, 39
Pediculosis, 437
capitis, 437
corporis, 439, 440
diagnosis, 441
eruption of, 135
etiology, 441
treatment, 441
definition, 437
diagnosis, 439
etiology, 437
pubis, 442
diagnosis, 442
etiology, 442
treatment, 442
treatment, 439
Pediculus capitis, 437
corporis, 439
pubis, 442
Peitschenwurm, 456
Pélade, 662
Pellagra, 367, 368
definition, 367
diagnosis, 371
etiology, 369
pathology, 369
prognosis, 371
symptoms, 367
treatment, 371
Pellagre, 367
Pellagrous dermatitis, 370
Pemphigus, 178
acute, 179
bleb of, 186
chronic, 180, 181
circinatus, 170
definition, 178

Pemphigus foliaceus, 182
gangrænosus, 200
vegetans, 183, 184
bleb of, 187
diagnosis, 185
pathology, 185
prognosis, 189
treatment, 188
vulgaris, 182
Pendje sore, 344
Penetration of skin by ointments, 45
Perforating ulcer of the foot, 527
definition, 527
diagnosis, 528
etiology, 528
pathology, 528
prognosis, 528
symptoms, 527
treatment, 528
Perforirendes Fussgeschwür, 527
Pernio, 49
Persistent papular dermatosis, 80
Peruvian wart, 350
Petite verole, 373
Phenacetin, 41, 219
Phenol, 41
Phosphoridroses, 718
definition, 718
Photidrose, 718
Phthiriase, 437
Phthiriasis, 437
Physiology of skin, 14
and anatomy of the skin, 1
Pian, 347
Pied de madure, 342
Piedra, 652
definition, 652
diagnosis, 653
etiology, 652
nostras, 652
pathology, 652
symptoms, 652
treatment, 653
Pigment, 7, 14, 34
brown, 4
granules, 34
Pigmentary mole, 593
syphilide, 285
diagnosis, 285
Pigmentation, 1, 33, 34
anomalies of, 530
arsenical, 33, 217
Pigmentationis anomaliæ, 530
Pilaris, keratosis, 474, 475
pityriasis rubra, 93, 94, 96
Pinta, 435
definition, 435
Pinta, diagnosis, 436
etiology, 436
pathology, 436
symptoms, 435
treatment, 436
Pityriasis maculata et circinata, 112
nigricans, 715
pilaris, 93, 474
rosé, 112
rosea, 112, 114, 153
definition, 112
diagnosis, 115
etiology, 113
pathology, 115
pilaris, 93, 94, 96
definition, 93
diagnosis, 95
etiology, 94
ointment for, 97
pathology, 95
prognosis, 95
symptoms, 93
treatment, 95
prognosis, 116
treatment, 116
symptoms, 112
rubra, 66
simplex, 682
steatodes, 682
versicolor, 540
versicolore, 540
Plaques jaunâtres des paupières, 580
Plasma cell, 32
Plasters, 46
Plica, 651
definition, 651
etiology, 652
polonica, 651
symptoms, 651
treatment, 652
Plique polonaise, 651
Pocken, 373
Podelcoma, 342
Poils accidentels, 642
Poliosis, 670
Poliothrix, 670
Polyidrosis, 711
Polytrichia, 642
Pompholyx, 167, 168
definition, 167
diagnosis, 169
etiology, 168
pathology, 168
prognosis, 169
symptoms, 167
treatment, 169

Porrigo decalvans, 662
Postmortem wart, 249
Potassium and sodium, bromides of, 218
iodides of, 40
Pou de bois, 454
Powders, dusting, 44, 140
Prickle-cells, 3
Prickly heat, 721
Primary lesions, 17
character of, 36
Prokeratosis, 487
definition, 487
diagnosis, 489
etiology, 488
pathology, 488
prognosis, 489
symptoms, 487
treatment, 489
Protectives, 47
Prurigo, 77, 133
definition, 77
diagnosis, 79
etiology, 78
nodularis, 80, 81
definition, 80
diagnosis, 80
etiology, 80
pathology, 80
prognosis, 81
symptoms, 80
treatment, 81
pathology, 79
prognosis, 79
symptoms, 77
treatment, 79
Prurit circonscrit avec lichenification, 91
Pruritus, 626
ani, 627
definition, 626
diagnosis, 628
etiology, 627
pathology, 627
localis, 627
lotion for, 630
oil for, 630
ointment for, 630
prognosis, 628
symptoms, 626
treatment, 628
universalis, 626
vulvæ, 627
Pseudobotryomycose, 234
Pseudoleukæmia cutis, 622
Pseudoxanthoma elasticum, 584
diagnosis, 584
pathology, 584
Pseudoxanthoma elasticum, treatment, 584
Psoriasiform and lichenoid exanthem, 110
Psoriasis, 97, 100
anthrasol in, 109
chrysarobin paste in, 108
definition, 97
diagnosis, 103
etiology, 99
pathology, 101
prognosis, 105
pyrogallol in, 110
symptoms, 97
tar in, 109
treatment, 105
X-ray for, 110
Psorospermose folliculaire végétante, 477
Pubis, pediculosis, 441
pediculus, 442
Puce commune, 443
de sable, 453
Pulex irritans, 443
penetrans, 453
treatment, 453
Purpura, 461
annularis telangiectodes, 465
diagnosis, 466
etiology, 466
pathology, 466
prognosis, 466
symptoms, 465
treatment, 466
definition, 461
diagnosis, 464
etiology, 463
hemorrhagica, 462
Hennock's, 462
pathology, 463
prognosis, 464
rheumatica, 462
scorbutica, 466
simplex, 461
symptoms, 461
treatment, 465
Pustula maligna, 338
Pustular eczema, 121, 133, 134
syphiloderm, 278, 279, 283
Pustules, 19, 31

Qualitative alterations of pigment, 33
Quantitative alterations of pigment, 33
Quincke's disease, 65
Quinine, 40
Quirica, 435

Race, 24, 35
Radiant energy, 47
Radiodermatitis, 224
pathology, 225
prognosis, 225
symptoms, 224
treatment, 225
Raynaud's disease, 204
Raynaud'sche krankheit, 204
Recklinghausen's disease, 563
Recurrent scarlatiniform erythema, 73
Recurring summer eruption, 165
Red gum, 721
Remedies, internal, 38
Repens, dermatitis, 197, 198
Resistant maculo-papular scaly erythrodermias, 110
Rete mucosum, 3, 30
cells of, 3
Rheumatica, purpura, 462
Rheumatism and gout, 27
of the skin, 631
Rhinopharyngitis mutilans, 352
Rhinoscleroma, 355, 356
definition, 355
diagnosis, 357
etiology, 356
pathology, 356
prognosis, 357
symptoms, 355
treatment, 357
Rhynochoprion penetrans, 453
Ringed eruption, 572
hair, 671
Ringworm, 135, 153, 406, 412, 413
of the axilla, 416
of the beard, 410, 429
of the body, 412, 414
of the nails, 640, 641
of non-hairy parts, 429
of the scalp, 406, 407, 408, 418, 419
Ritter's disease, 76
Rodent ulcer, 598
Röntgen ray dermatitis, 224
Root-sheath, external, 9
inner, 9
Rosacea, 702
acne, 702
Rose, 231
Rosea, pityriasis, 112, 114, 153
Rötheln, 391
Rothlauf, 231
Rotz, 340
Rougeole, 388
fausse, 391
Rouget, 452
Rubella, 391
Rubella, definition, 391
diagnosis, 393
etiology, 392
pathology, 392
prognosis, 393
symptoms, 392
treatment, 393
Rubeola, 388, 391

Saccharine diabetes, carbuncles in, 26
furuncles in, 26
Saccharomycosis hominis, 328
Salicylate of soda, 219
Salicylic acid, 219
Salol, 219
Salt rheum, 116
Salts, mercury and its, 219
Salvarsan, 219
Salves or ointments, 44
Salzfluss, 116
Sand-flea, 453
Sandfloh, 453
Sarcoid, 264
multiple benign (Boeck), 264, 266
Sarcoma capitis, 556
cutis, 616
definition, 616
symptoms, 616
idiopathic multiple hemorrhagic (Kaposi), 618, 619
melanotic, 617
multiple pigmented hemorrhagic, 620
non-pigmented, 616
of the skin, 616
Sarcomatosis cutis, 323
Sarcome cutané, 616
Savill's disease, 71
Scabiei, acarus, 446
Scabies, 444, 445
burrow of, 447
definition, 444
diagnosis, 448
etiology, 447
pathology, 447
prognosis, 450
symptoms, 444
treatment, 449
Scales, 20
Scalp, eczema of, 144
favus of, 399
lupus erythematosus of, 360
ringworm of, 406, 407, 408, 418, 419
smooth muscles and hair follicles of, 11
subacute eczema of, 144
Scaly eczema, 121, 134
of the palm, application for, 146

Scar, 570
hypertrophic, 568
Scarlatina, 382
definition, 382
diagnosis, 386
etiology, 385
pathology, 385
prognosis, 387
symptoms, 382
treatment, 388
Scarlatine, 382
Scarlet fever, 382
Scars, 22
Scharlach, 382
Scharlachfieber, 382
Schmeerflus, 681
Schuppenflechte, 97
Schweissfluss, 711
Schweissfriesel, 724
Schwiele, 470
Scissura pilorum, 645
Sclerem der Neugeborenen, 510
Sclerema, 505
neonatorum, 510
definition, 510
diagnosis, 511
etiology, 510
pathology, 510
prognosis, 511
symptoms, 510
treatment, 511
Sclérème des adultes, 505
Scleriasis, 505
Scleroderma, 505
circumscribed, 506, 507
definition, 505
diffuse, 505
synonyms, 505
Sclerodermie, 505
Scleroma adultorum, 505
Scorbutus, 466
definition, 466
diagnosis, 467
etiology, 467
pathology, 467
prognosis, 468
symptoms, 466
treatment, 468
Scrofuloderma, 259
diagnosis, 260
etiology, 260
pathology, 260
symptoms, 259
treatment, 261
Scrofulosorum, lichen, 261, 262
Scrotum, eczema of, 147
Scurvy, 466
Season, 24
Sebaceous cyst, 691
glands, 10, 14
diseases of, 680
Sebaceum, adenoma, 557, 558
Seborrhée, 681
Seborrhœa, 681
congestiva, 357
corporis, 149
definition, 681
diagnosis, 683
etiology, 683
lotion for, 685
nigricans, 715
ointment, 685
oleosa, 681
pathology, 683
prognosis, 684
sicca, 149, 682
symptoms, 681
treatment, 684
Seborrhœic dermatitis, 149, 152
axilla, 151
sternum, 150
Sebum, 10, 14
Secondary lesions, 20
absence of, 36
presence of, 36
Sedatives and antipruritics, 47
Senile atrophy, 30
of the skin, 522
wart, 500
Senilis, alopecia, 656
atrophia cutis, 522
keratosis, 472, 473
verruca, 501
Serum, foreign, 42
injections of, 42
Sex in relation to diseases of skin, 25, 35
Shingles, 158, 160
Silver nitrate, 219
Skin, colloid degeneration of, 584
diphtheria of, 206
glossy, 529
multiple gangrene of, 203
Sklerodermie, 505
Sleeping sickness, 372
Small glands, 12
Small pustular scrofuloderm, 254
Smallpox, 373, 374
definition, 373
hemorrhagic, 376
symptoms, 373
Smooth muscles and hair follicles of the scalp, 11
Soaps, 46
Soda, salicylate of, 219

Sodium, 218
benzoate, benzoic acid and, 218
biborate, boric acid and, 218
and potassium, iodides of, 40
Soft fibroma, 563
Soles, keratosis of, 484
Solution, Williams, 428
Sommersprosse, 530
Sore, oriental, 344, 345
Spargosis, 514
Spedalskhed, 307
Sphaceloderma, 200
Spindelhaare, 648
Spiral portion of sweat-duct in epidermis, 13
Spirals, Herxheimer's, 3
Spitzblattern, 393
Spitzencondylom, 503
Spitzenwartze, 503
Splenic fever, 338
Sporotrichosis, 333
definition, 333
diagnosis, 334
etiology, 334
pathology, 334
symptoms, 333
treatment, 335
Spotted sickness, 435
Squamous eczema, 134
palmar and plantar syphiloderm, 290
diagnosis, 293
syphiloderm, 292
St. Anthony's fire, 231
Stearrhœa, 681
nigricans, 715
Steatoma, 691
definition, 691
diagnosis, 692
etiology, 692
pathology, 692
prognosis, 693
symptoms, 691
treatment, 693
Steatome, 691
Steatorrhœa, 681
Steatozoön folliculorum, 458
Stereo-phlogose nodulaire et circinée, 572
Stinking sweat, 717
Stinkschweiss, 717
Stratum corneum, 1
germinativum, 3
granulosum, 2
lucidum, 2
subcutaneum, 4
Straw dermatitis, 450
itch, 450
Striæ et maculæ atrophicæ, 523
definition, 523
diagnosis, 525
etiology, 524
pathology, 524
symptoms, 524
Striped muscles, 6
Strophulus, 721
albidus, 689
prurigineux, 77
Subacute eczema, 143
remedies for, 143
of the scalp, 144
Subjective symptoms, 17, 23
Sudamina, 723
Sudatoria, 711
Sudor Anglicus, 724
sanguineus, 719
urinosus, 718
Sudoriparous glands, 11, 14
Suette de Picardie, 724
miliaire, 724
Sueurs sanglantes, 719
Sulphonal, 220
Sulphur, 41, 427
Superfluous hair, 642
Sweat, 14
-duct in epidermis, spiral portion of, 13
-glands, 4, 11, 12
diseases of, 717
Sweating sickness, 724
Sycosiform syphiloderm, 275
Sycosis, lupoid, 678
non-parasitaire, 676
vulgaris, 676, 677
definition, 676
diagnosis, 679
etiology, 677
pathology, 678
symptoms, 676
treatment, 679
Symptomatic erythemata, 48
Symptomatica, alopecia prematura, 657
Symptoms, objective, 17
subjective, 17, 23
Syphilide, pigmentary, 285
Syphilis, 267
congenital, 295
cutanea congenita, 295
definition, 267
diagnosis, 269
initial lesion of, 268
of the nails, 638
Syphilitic gummata, multiple ulcerating, 294

Syphilitic papule, vegetating, 299
Syphiloderm, annulo-papular, 274
bullous, 286
circinate papular, 273
squamous, 291
erythematous, 270, 271
follicular, 276
gummatous, 293
large papulo-pustular, 284
miliary papular and pustular, 276
pustular, 280, 281
nodular, 288, 289, 290, 291
ulcerating, 289
papular, 272
pustular, 278, 279, 283
squamous, 292
palmar and plantar, 290
sycosiform, 275
varioliform, 282
vesicular, 277
Syphilodermata, 269
late or tertiary, 283
Syringocystadenoma, 553
Syringocystoma, 553, 554, 555
diagnosis, 555
etiology, 554
pathology, 554
symptoms, 554
treatment, 556

Tache de feu, 587
de rousseur, 530
Tactile corpuscles, 6
Tartar emetic, 216
Tatouage, 539
Tätowierung, 539
Tattooing, 539
Teigne faveuse, 398
Telangiectasia follicularis annulata, 465
Telangiectasis, 590
definition, 590
etiology, 591
symptoms, 590
treatment, 591
Telangiectodes, purpura annularis, 465
Tetter, 116
Thallium acetate, 220
Therapeutics, general, 38
Tinea cruris, 415, 423
favosa, 398
imbricata, 430, 432, 433
definition, 430
diagnosis, 433
etiology, 431
prognosis, 433
symptoms, 431
treatment, 433
Tinea nodosa, 652
trichophytina, 406
versicolor, 540
definition, 540
diagnosis, 542
etiology, 541
pathology, 541
symptoms, 540
treatment, 543
Tokelau ringworm, 430
Touch-cells, 6
Traumatica, dermatitis, 297
Treatment, external, 42
internal, 39
vaccine, 42
Trichauxis, 642
Trichoclasia, 646
Tricho-epithelioma, 550, 552, 553
diagnosis, 552
etiology, 551
papulosum multiplex, 551
pathology, 552
symptoms, 551
treatment, 553
Trichomycose nodulaire, 652
Trichomycosis discolor, 670
nodosa, 653
palmellina, 653
Trichophytie, 406
Trichophytosis, 406, 423
barbæ, 410
diagnosis, 411
symptoms, 410
capitis, 406
diagnosis, 409
symptoms, 406
corporis, 412
etiology, 416
pathological anatomy, 422
solution for, 428
symptoms, 412
treatment, 424
deep, 424
definition, 406
profunda, 417, 425
unguium, 640
Trichoptilose, 646
Trichoptilosis, 645
Trichorrhexis nodosa, 646, 647
definition, 646
etiology, 647
lotion for, 648
pathology, 647
prognosis, 648
symptoms, 647
treatment, 648
Trichosporie, 652

Trypanosomiasis cutis, 372
definition, 372
symptoms, 372
treatment, 372
Tuberculide, 254
papulo-necrotic, 254
Tuberculides, 253
Tuberculin, 220
employment of, 37
Tuberculosa gummosa, 259
Tuberculosis colliquativa cutanea, 259
cutis orificialis, 256
fungosa, 153
miliaris cutis, 256
diagnosis, 257
symptoms, 256
treatment, 257
propria cutis, 256
verruca necrogenica, 251
etiology, 251
pathology, 251
treatment, 252
verrucosa cutis, 249, 250, 252
diagnosis, 252
symptoms, 249
Tuberculum sebaceum, 689
Tumor formation with ulceration, 325
Tumors, 20
Tunica dartos, 7
Turban tumors, 556
Tyloma, 470
Tylosis, 470
palmæ et plantæ, 482
Tysonian glands, 11

Ulcerating granuloma of the pudenda, 354
nodular syphiloderm, 289
Ulceration, tumor formation with, 325
Ulcers, 22
Ulerythema centrifugum, 357
sycosiforme, 668
Uncinarial dermatitis, 455
Unguium, atrophia, 635
eczema, 125
trichophytosis, 640
Unstriped muscles, 7
Uridrose, 718
Uridrosis, 718
definition, 718
symptoms, 718
Urinidrosis, 718
Urticaire, 58
Urticaria, 58, 133
definition, 58
dermographism in, 59
diagnosis, 61
Urticaria, etiology, 60
pathology, 61
perstans, 80
pigmentosa, 63, 64
definition, 63
diagnosis, 65
etiology, 63
pathology, 63
prognosis, 65
symptoms, 63
treatment, 65
prognosis, 61
symptoms, 58
treatment, 61

Vaccinal eruptions, 381
Vaccine treatment, 42
Vaccines, autogenous, 42
Vaccinia, generalisata, 381
generalized, 381
Vaiuolo, 373
Varicella, 393, 395
definition, 393
diagnosis, 396
etiology, 396
gangrænosa, 200
pathology, 396
prognosis, 397
symptoms, 393
treatment, 397
Varicelle, 393
Varicellen, 393
Variola, 373
Variole, 373
Varioliform syphiloderm, 282
Varioloid, 377
diagnosis, 379
etiology, 378
pathology, 378
prognosis, 380
treatment, 380
Varnishes, 46
Vascularis, nævus, 587, 588
Vater, corpuscles of, 5
Vegetable parasites, inflammations due to, 398
Vegetating syphilitic papule, 299
Vegetations vasculaires, 557
Venereal wart, 503
Ver de Guinée, 456
Verolette, 393
Veronal, 220
Verruca, 498
acuminata, 503
definition, 498
necrogenica, 249
Peruana, 350

Verruca Peruana, definition, 350
diagnosis, 352
etiology, 351
pathology, 351
prognosis, 352
symptoms, 350
treatment, 352
plana juvenilis, 500
seniorum, 500
seborrhœica, 500
Verrucæ digitatæ, 499
planæ, 500
Verrue, 498
senilis, 501
diagnosis, 502
etiology, 501
pathology, 501
prognosis, 502
treatment, 502
symptoms, 498
Verrues telangiectasiques, 489
Versicolor, tinea, 540
Vesicles, 19, 31
situation of, 31
Vesicular eczema, 119, 130, 133
syphiloderm, 277
diagnosis, 278
Vesiculation, 31
Vibrissæ, 8
Viruela, 373
Vitiligo, 534, 536
definition, 534
diagnosis, 536
etiology, 535
pathology, 535
prognosis, 537
symptoms, 534
treatment, 537
Vitiligoidea, 580
Vitreous membrane, 9
Vogelmilbe, 450
Vulvæ, kraurosis, 525

Wart, 498
Warze, 498
Washes or lotions, 54
Wasserpocken, 393
Water itch, 455
pox, 455
sores, 455
Weichselzopf, 651
Wen, 691
Wheals, 18
Wood-tick, 454
Wool-sorter's disease, 338
Wundrose, 231

Xanthelasma, 580
Xanthelasmoidea, 63
Xanthom, 580
Xanthoma, 580
definition, 580
diabeticorum, 581
diagnosis, 582
etiology, 581
pathology, 582
prognosis, 583
symptoms, 581
treatment, 583
elasticum, 584
palpebrarum, 580
planum, 580
symptoms, 580
tuberculatum, 580
tuberosum, 580, 583
multiplex, 580
symptoms, 580
Xanthome, 580
Xeroderma, 493
ichthyoide, 493
pigmentosum, 612
definition, 612
diagnosis, 615
etiology, 614
pathology, 614
prognosis, 615
symptoms, 613
treatment, 615
X-ray burn, 224
dermatitis, 224

Yaws, 347

Zona, 158
Zoster, 158, 160
arsenicalis, 162
brachialis, 160
facial, 160
femoral, 161
frontal, 159, 160
herpes, 158, 161, 164
lumbo-abdominal, 161
thoracic, 160

27.A.329.
Diseases of the skin; their pat1917
Countway Library BES9141
3 2044 045 989 894

27.A.329.
Diseases of the skin; their pat1917
Countway Library BES9141
3 2044 045 989 894